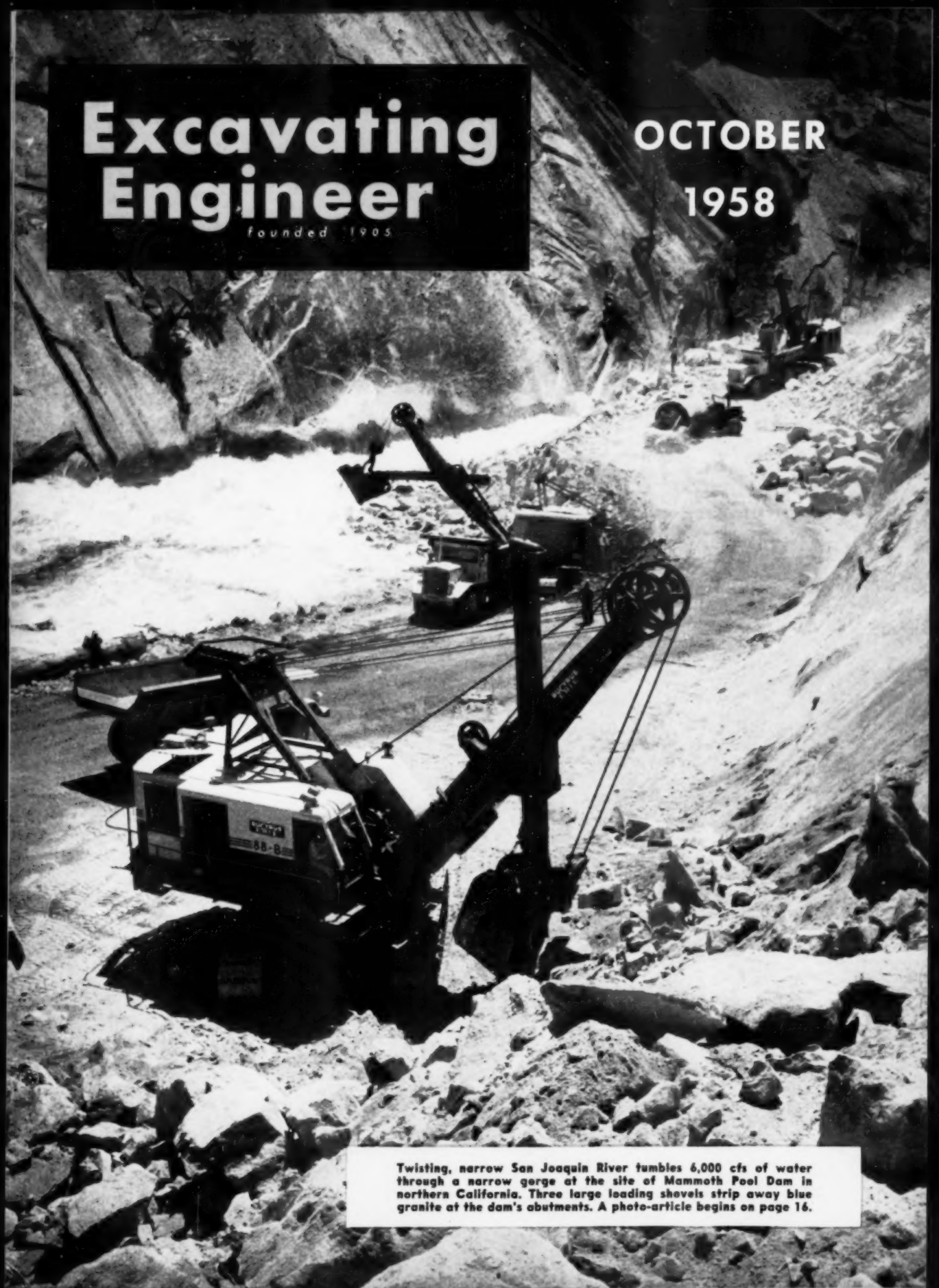
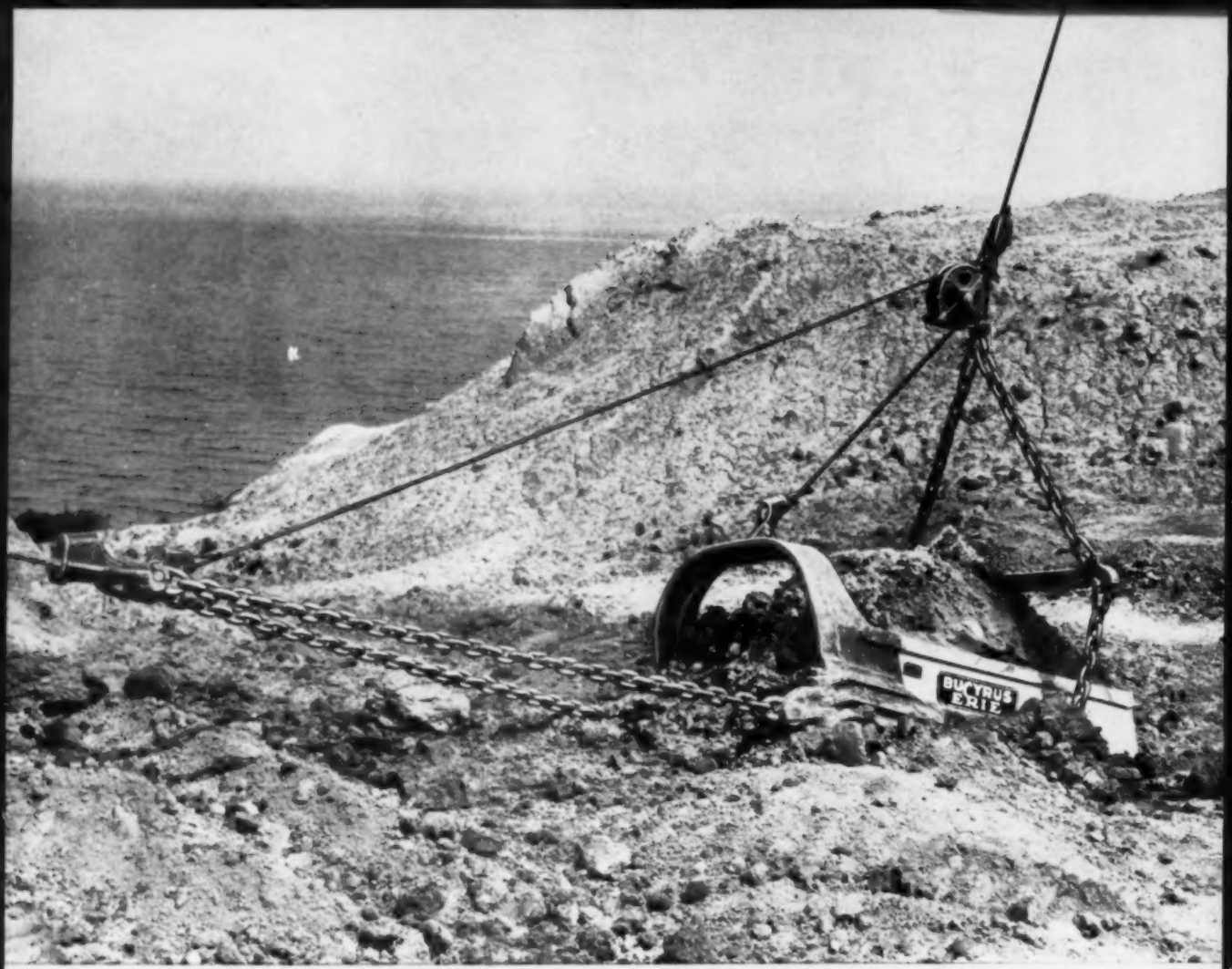
Excavating Engineer

founded 1905

OCTOBER 1958



Twisting, narrow San Joaquin River tumbles 6,000 cfs of water through a narrow gorge at the site of Mammoth Pool Dam in northern California. Three large loading shovels strip away blue granite at the dam's abutments. A photo-article begins on page 16.



Bucyrus-Erie buckets are accurately balanced so that "slicing-action" lip penetrates quickly. Basket is tapered to fill rapidly. It is correctly flared and balanced to carry cleanly; has smooth interior and high arch to dump fast.

Bucyrus-Erie buckets PROVE their toughness—

Handle many hundred thousand yards of dirt, sand, and gravel

Bucyrus-Erie buckets are given tough resistance to abrasion through use of the special lightweight alloy, BECOLOY. It *must* be tough, because it resists wear in buckets that handle many hundred thousand yards of dirt, sand and stone.

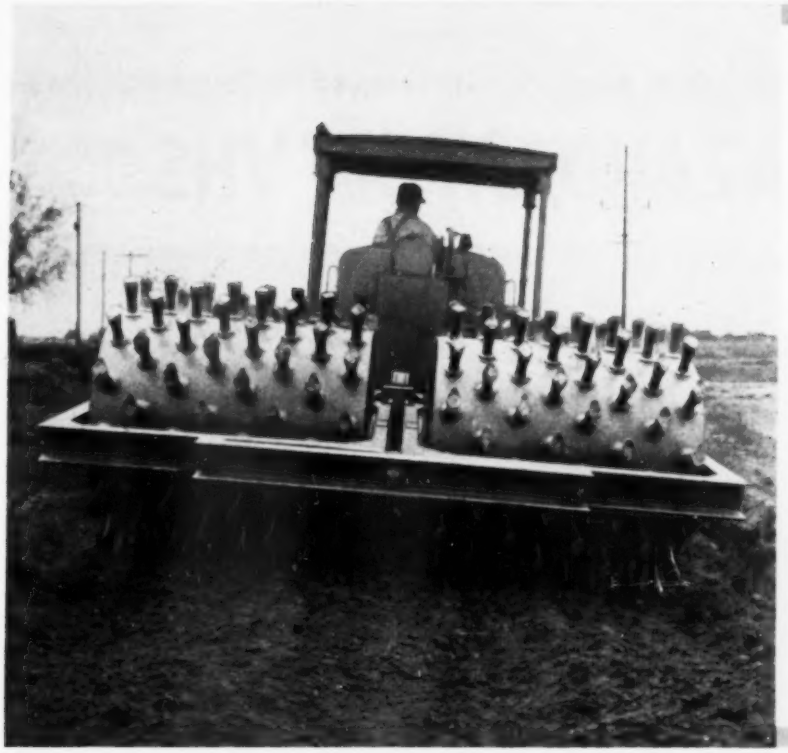
BECOLOY, used in teeth, lip and side castings, also has high impact resistance to take the bending and breaking forces that come with hard knocks. Field maintenance is simple, too. BECOLOY can be cut with an acetylene torch and welded without special procedures.

On top of longer life and lower upkeep, BECOLOY brings extra payloads. Buckets made of high-strength BECOLOY are lighter. You swing a load that *pays* a lot, not just *weighs* a lot.

Your Bucyrus-Erie distributor will help you choose the bucket that is best for your needs — from a wide range of sizes with solid or perforated baskets, in light, medium, and heavy-duty types. 42R58C

A Familiar Sign . . . BUCYRUS ERIE *. . at Scenes of Progress*

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN



No area above the **Diamond**foot comes in contact with the soil to alter psi rating; further, rolling drag and material pick-up are minimized.

The leading and trailing edges of the **Diamond**foot make easy foot penetration and withdrawal in heavy soils.

Cross-section dimensions of the **Diamond**foot are greater than any cross-section dimensions of the tapered shank. Full compaction effort is always exerted at the foot face and not dissipated through shank contact.

New **BROS** relief shank tamping foot provides full compaction effort and less drag

● Stress-relieved shank of the new BROS Diamondfoot design has two major advantages for earthwork compaction. Here's why:

First; to produce the lbs. per sq. in. foot pressure required by subgrade sheepsfoot rolling specifications, the BROS design permits the *full* compaction force of the roller drum to be exerted at the *bottom* of the foot —and not dissipated by shank contact with the soil materials. **That's because the Diamondfoot has a larger cross-section than any cross-section of the reverse tapering *shank*.**

Second; this design minimizes rolling drag because in penetration and withdrawal, the Diamondfoot edge design provides the least disturbance to the soil. Too, by reverse tapering, the shank is load relieved and the heavy soil materials have little chance to cling.

Other important features of this engineered Diamondfoot Roller include: Unitized drum and axle; non-adjusting, sealed, self-aligning ball bearings, *outside mounted*. Adjustable and reversible cleaner teeth provide extra long service life.

BROS Diamondfoot Rollers range in sizes from 133 psi to 724 psi foot pressures. Your nearest BROS Dealer has all the details. Or write us. Worldwide sales and service.

BROS ***Incorporated***

ROAD MACHINERY DIVISION

1057 TENTH AVENUE S.E. • MINNEAPOLIS 14, MINNESOTA

1057 TENTH AVE. S.E.
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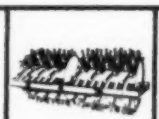
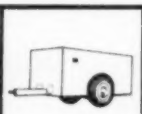
Write today for the full report on the Ohio tests and for complete new literature describing the new BROS SP-730 pneumatic roller. It's free of cost or obligation!



SHEEPSFOOT TAMPERS



ROLL-O-PACTOR

BITUMINOUS CIRCULATOR

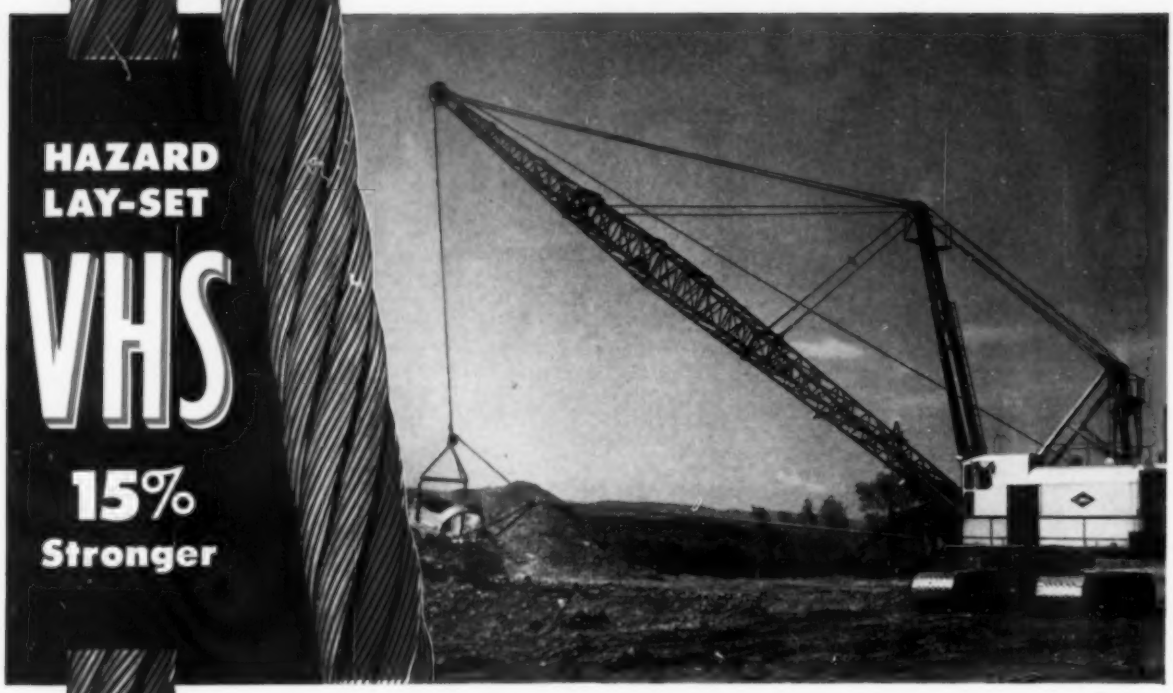
VIBRA-PACTOR

9-TON SELF-PROPELLED ROLLER

9 AND 13-TON ROLLERS

New grade of wire rope developed for toughest jobs—

HAZARD LAY-SET VHS® *15% stronger*



for example: **A Strip Miner Gets 60% More Service from Lay-Set VHS Dragline**

* Everywhere operators are talking about the new grade of rope known as VHS which means Very High Strength. They have heard about its great service on jobs such as draglines, scrapers, shovel hoists, logging chokers and rotary drilling.

"I always thought one line was pretty much like the next until we gave VHS a try on our Lima 2400," said Mr. Gene Bartoli, owner of A&B Construction Company, Nanticoke, Pa. "We're still using our original VHS dragline after 3 weeks of rough going. This is at least 10 days more service than we ever got from any other rope."

That is because LAY-SET VHS is tougher and more wear-resistant as well as 15% stronger. VHS also comes with factory built-in lubrication which adds to its service life.

If your work calls for a superior grade of rope, order LAY-SET VHS—it's the best you can buy. If you don't need its greater strength and ruggedness, order LAY-SET preformed made of Improved Plow Steel. This was the highest grade until our engineers perfected VHS. This great new rope is now available at LAY-SET distributors everywhere. • ***For further details write for Bulletin DH 513-H.***

HAZARD WIRE ROPE DIVISION
American Chain & Cable Company, Inc.

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.

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Excavating Engineer

founded 1908

South Milwaukee, Wisconsin

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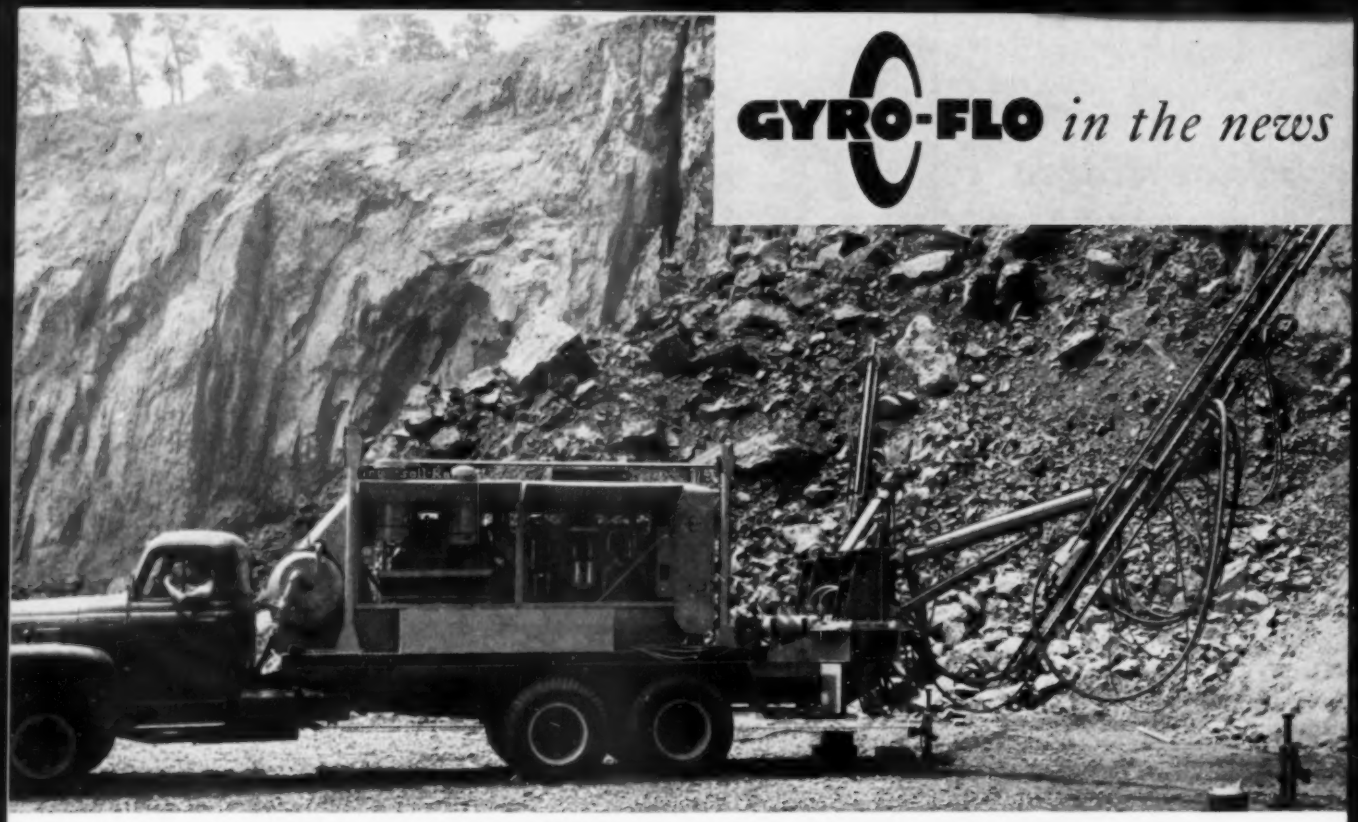
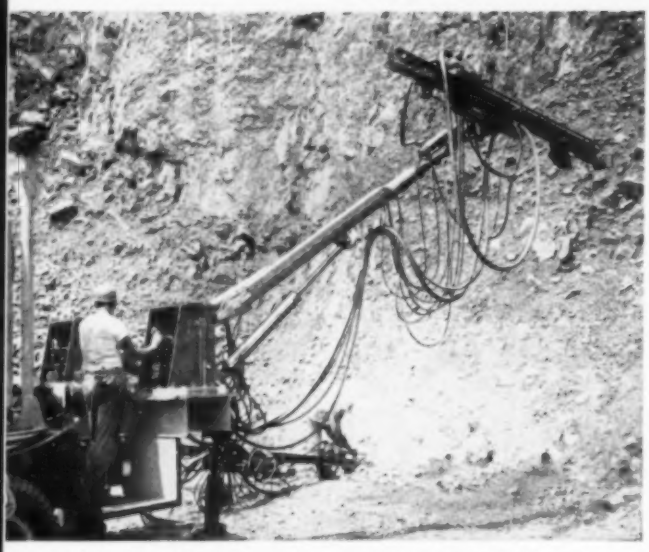


GYRO-FLO *in the news*



High holes, horizontal or at any angle, are no problem at all with this truck-mounted drilling rig. Operator at the control station can "spot" the drill anywhere he wants at the touch of a throttle.

Photo below shows that toe holes are "duck soup" for this Gyro-Flo 900 and Hydra-Boom combination.

Truck-Mounted Drilling Rig Helps Contract Driller Meet Deadline Dates

"Take a highway truck chassis, add a 900-cfm Gyro-Flo compressor and two I-R Hydra-Boom units equipped with two D45, 4½" Bore drifter drills, and you're in business with the fastest contract-drilling unit you ever saw." So says an official of the New Jersey Drilling Co., who admits that this is a slight oversimplification. "Some planning and good design went into this rig, too. The I-R distributor and sales engineer sure did a fine job on this rig."

The truck-mounted drilling rig shown here has lived up to his every expectation—helped him finish up faster and meet the tightest deadlines with a minimum of man-hours and drilling expense.

GYRO-FLO 900 PROVIDES AMPLE AIR POWER

A standard 900-cfm Gyro-Flo rotary portable compressor, less running gear, was mounted on a 6-wheel highway truck chassis. There was plenty of room available to mount two Hydra-Boom drills. The completely self-contained compressor provides ample air power for any job—will run both heavy-duty drills simultaneously at full pressure. The rig can move from job to job at a moment's notice and at maximum highway speeds. A frame above the compressor holds the drill towers while in transit.

HYDRA-BOOMS CONVERT SETUP TIME TO DRILLING TIME

With two heavy-duty I-R D45 rock drills mounted on Hydra-Booms, the New Jersey Drilling Co. can set up to drill any type of hole patterns in a matter of minutes. All drill-tower motions, including power dump and swing and power cone, are controlled by the touch of a throttle. Husky hydraulic cylinders, five for each drill, have completely replaced the time-consuming muscle power formerly required to set up for each hole.

Ask your Ingersoll-Rand representative to show you how Gyro-Flo compressors and I-R rock drills can help speed *your* drilling work, with important savings in cost per foot of hole.

Ingersoll-Rand

2-835 **11 Broadway, New York 4, N.Y.**

AN UNBEATABLE COMBINATION . . . GYRO-FLO COMPRESSORS AND I-R ROCK DRILLS

CROWD— that gives DIGGING POWER PLUS!

Those words "Digging Power Plus," are not just a catch phrase. They mean what they say! A Northwest Shovel *does* give you "Digging Power Plus."

The Northwest Crowd is a Dual Crowd. It is the simplest, most powerful crowding mechanism on the market today — a combination of the simple Northwest Independent Crowd *plus* an additional force for crowding that most independent crowd shovels waste.

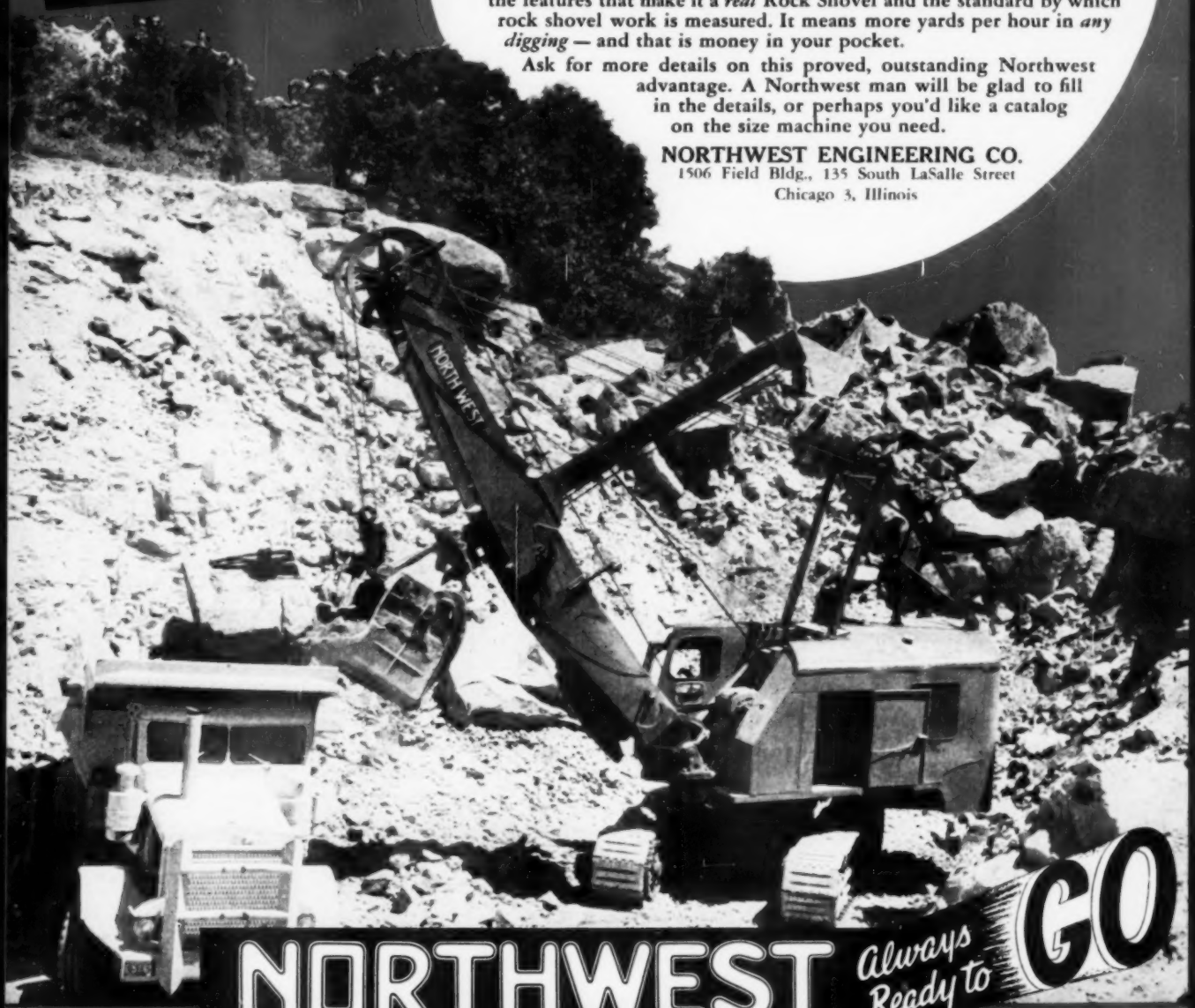
Every power shovel on the market that dead-ends the hoist cable on the boom is wasting a force equal to one-half the pull at the dipper bale.

On Northwest Shovels the tension of the Hoist Cable is added to the force of the Independent Crowd Cable, making available for digging this additional force, wasted by most independent crowd shovels. *Here is a simple, powerful crowd!*

In this additional crowding force lies a large part of Northwest ability to handle rock digging without stuttering — without delay. It is one of the features that make it a *real* Rock Shovel and the standard by which rock shovel work is measured. It means more yards per hour in *any digging* — and that is money in your pocket.

Ask for more details on this proved, outstanding Northwest advantage. A Northwest man will be glad to fill in the details, or perhaps you'd like a catalog on the size machine you need.

NORTHWEST ENGINEERING CO.
1506 Field Bldg., 135 South LaSalle Street
Chicago 3, Illinois

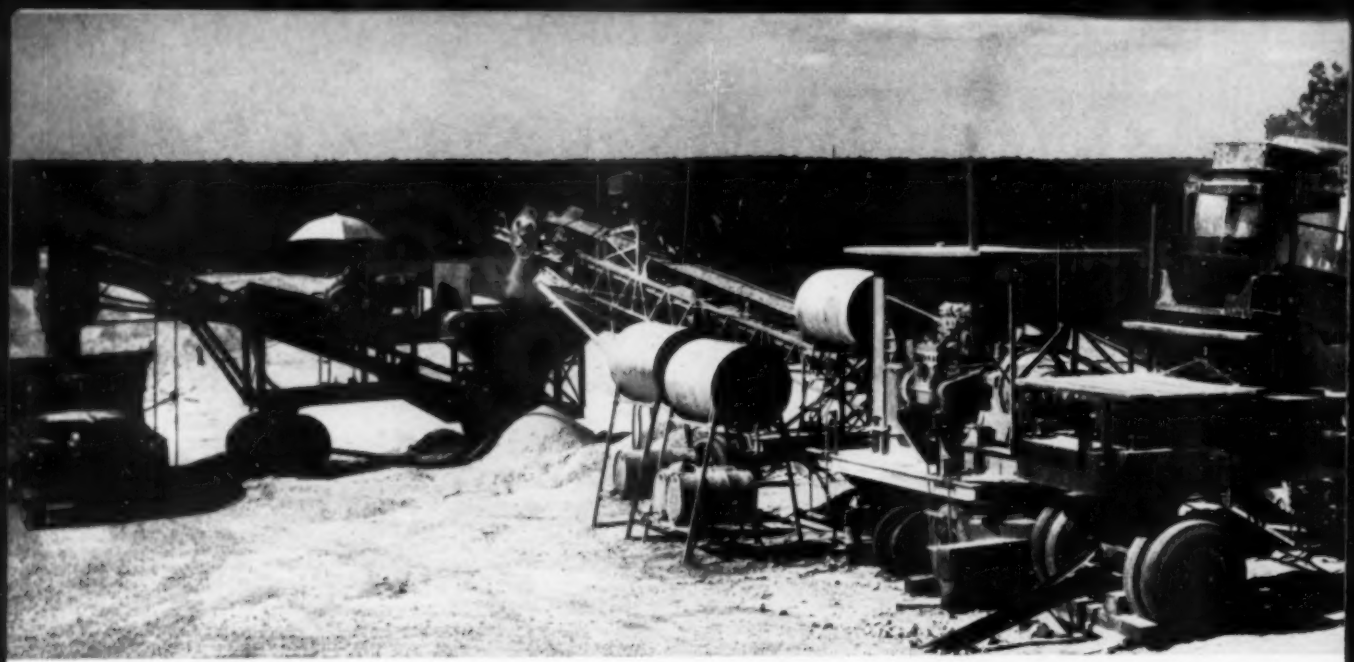


NORTHWEST Always Ready to GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity

G-58-ICO



On this portable crushing operation, producing materials for use on a grading and drainage contract for the Missouri Freeway construction project near Joplin, Mo., the W. J. Menefee Construction Co. uses 3 Cat Engines to power this crusher.

He staked his (business) life

This big 100% Cat fleet owner says: "The *dependability* of engine power by Caterpillar has always made it possible to anticipate *true* costs—takes the guesswork out of bidding."

From a modest beginning as a small contractor, the highly successful W. J. Menefee Construction Company of Sedalia, Mo., has bet its business life on Caterpillar Engines and machines across the board.

"Experience has shown us that we can always rely on Cat Engine power," says Mr. E. W. Menefee, president.

Recently this big spread was responsible for 9 miles of grading and drainage, including the interchange, to join the Missouri Freeway with Oklahoma's Northeastern Turnpike. Besides a variety of modern, heavy-duty Cat Engines to power crusher, shovels and compressors, Menefee is getting this big, tough job done on time with a large fleet of Caterpillar equipment, including DW21s and DW-10s, D9s and D8s (with No. 28 Rippers) and No. 12 Motor Graders.

This contractor's policy of always specifying Cat Engine power and machines—coupled with sound management practices—has paid off in profits. Like other successful contractors, this spread gains solid advantages by relying all the way on Cat equipment. Its reputation and preference by contractors mean pride of ownership, high trade-ins, and an organization that stands behind the product.

Reliably rated Cat Diesel Engines and Electric Sets give more work for each dollar spent for purchase, repairs and operation. Production is maintained at an even level because there is no appreciable letdown in power as equipment ages.

Cat DW21 Wheel Tractors pushloaded by a big D9 work in tough chert conglomerate on Menefee's Freeway job.

Cat Diesel drives a pneumatic compressor drilling blast holes in rock quarry for materials used on the Freeway job.

on Caterpillar

Cat Engines mean minimum down time, permitting closer bidding of every job, and their well-known durability can handle the harsh materials and severe job conditions the contractor faces. All of these factors result in lower operating costs than other diesel power plants; and the market value of Cat equipment stays high after normal amortization.

Get in touch with your Caterpillar Dealer today for details—he knows his business, and understands your problems, too.

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U. S. A. Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

A Cat D337 Engine powers this Lorain shovel feeding rock to Pioneer portable crushing plant — part of the W. J. Menefee Construction Company's big Missouri Freeway linkage project.

ENGINE POWER BY CATERPILLAR

Why we are a 100% Cat fleet owner today

"When buying machinery or preparing a bid we don't take unnecessary chances. Cat units will pay for themselves in savings alone. Elimination of excessive down time really pays off, and our operating costs are low. Cat Engines are real work horses, producing as rated, day in and day out. Add excellent dealer service and parts availability—even on the old ones—and you have the reason why we are a 100% Cat fleet owner today. We look for realistic value when we buy, and we get it when we specify Caterpillar!"

—E. W. Menefee, president

Engine Division Dept. EE10
CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.

Send me more information about Cat Engines and Electric Sets for original power and repowering.

- ☐ Have your dealer call for an appointment, as I may be in the market. I understand that I am under no obligation.
- ☐ I am interested in learning more in general about these engines.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

Everybody profits ...because

you belong

in this picture!

The publisher of this magazine is often asked what kind of a man you are . . . and how many like you are receiving his magazine.

Why is he asked?

Because the *advertisers* (whose money is his chief income) insist upon knowing the types of people (by industry or profession, by title) for whom the magazine is edited — and how many are getting it.

In order to standardize on the presentation of such information to advertisers and to have its accuracy vouched for by a disinterested third party, nearly 450 publishers have joined some 200 leading advertisers and advertising agencies in a non-profit organization called Business Publications Audit.

The purpose of BPA is to assure advertisers . . . by frequently checking and rechecking . . . that each member publisher is indeed distributing his magazine, in the *numbers* promised, to the *types* of men he promised would receive it.

The BPA symbol in this magazine means that *you belong* . . . that because of your occupational interests you are qualified, in the eyes of the advertisers, to receive it.

The advertiser can thus tell whether he's getting his money's worth.

The publisher has a better sales story to prospective advertisers because his magazine is "audited."

And you, the reader, get more value from the magazine because both the advertisers and editors, knowing what your special occupation is and what your interests are, are better able to prepare advertising and editorial material that will be most informative and useful to you.

What you can do

Publishers and advertisers frequently write to magazine readers to learn what kind of articles and advertisements appeal most. Cooperate with them — will you? — by answering their questions . . . in the interest of better communications between makers and markets.

BUSINESS PUBLICATIONS AUDIT OF CIRCULATION, INC.

420 Lexington Avenue New York 17, N. Y.

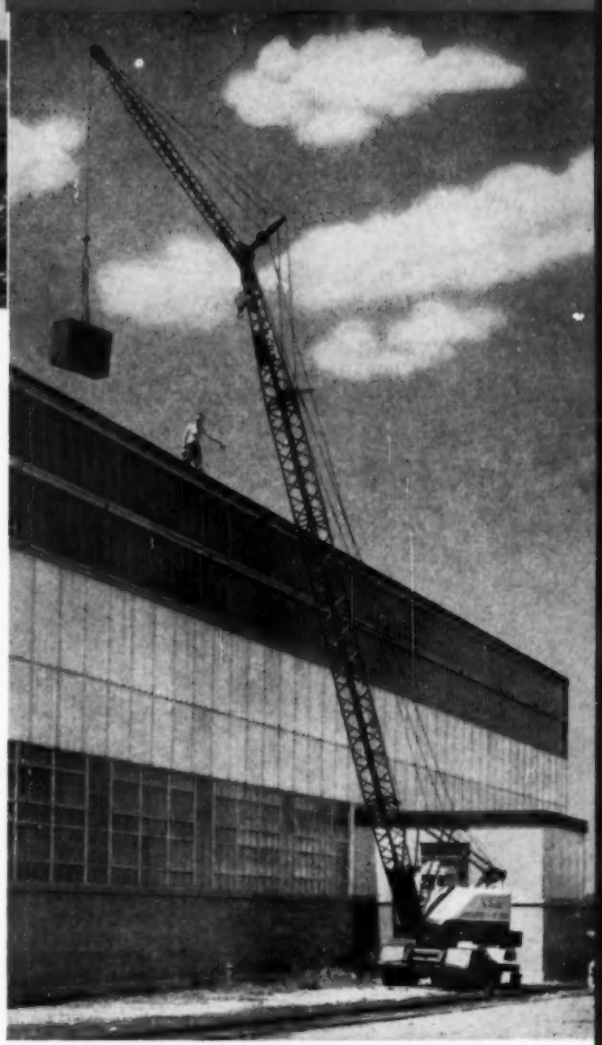
BPA

A NON-PROFIT, TRIPARTITE MEMBERSHIP CORPORATION OF ADVERTISERS, ADVERTISING AGENCIES AND BUSINESS PUBLICATIONS

Here's NEW Performance...NEW Dependability!

Unmatched quality at low cost... any way you figure it!

ALL NEW 11-B Transit Machine



× MULTIPLIES Production. The new 10-ton Bucyrus-Erie 11-B crane-excavator is a real go-getter! It's fast between jobs, fast on the job . . . operates as rapidly as a man can handle it.

— SUBTRACTS Servicing and Maintenance Time. Clutches and brakes are easily reached. Unit or bench assemblies in main machinery permit quick servicing, easy replacement. All gears are enclosed and run in oil, except the swing pinion and gear. Nylon pins and bushings in the control linkage need no lubrication. Ball bearing swing circle provides low friction, high load bearing capacity, low maintenance and minimum play.

+ ADDS to Work Time, Profits. Fast between-job travel speeds mean more time working. Strong construction throughout the chassis, main machinery and front end means maximum on-the-job time, too. Extra output ability plus extra work time adds up to extra profits.

÷ Lets You DIVIDE Your Time Between More Jobs. The 11-B combines rubber-tired mobility with maneuverability to handle a variety of scattered jobs. Main machinery arrangement simplifies conversion to hoe, crane, shovel, dragline, or clamshell for added versatility.

451E58C

BUCYRUS ERIE

A Familiar Sign at the Scene of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

Check It NOW

. . . at your nearby Bucyrus-Erie distributor or write us direct. Ask for all the facts and figures on these cost-cutting profit-makers. Invest confidently in this fast-moving, hard-working, easy-to-maintain mobile crane-excavator.

EUCLID'S unmatched Rear-Dump

Over 400 Euclid Rear-Dumps were put to work on the U. S. side of the St. Lawrence Seaway—with many others on the Canadian side. The 22-ton "Euc" outnumbered all other makes and models of off-highway haulers on this huge earthmoving project.

Rear-Dump "Eucs" have proved their rugged dependability and outstanding performance on the toughest jobs. With engines of 143 to a total of 670 h.p., they have plenty of power to move big loads on steep grades and difficult hauls often encountered in highway work.

On the Iron Ranges almost 4 times as much ore is moved in "Eucs" as in all other make Rear-Dumps! In Minnesota alone more than 1300 Euclids of 15 to 50 ton capacity are hauling ore and overburden.

Dam construction demands equipment that can take the pounding of heavy excavation loaded by big shovels and draglines and keep coming back for more! "Eucs" are unequalled for job availability and for low cost production—that's why they've been the choice of dam builders for many years.

With capacities ranging from 10 to 50 tons, there's a Rear-Dump "Euc" to fit any quarry or open pit mining operation. Simple design, combined with ample power and speed, easy handling and minimum downtime results in more tonnage moved at lowest cost. Quarry body is optional on most models.

experience gives you Bonus Benefits

For 25 years Euclid has specialized in designing and building equipment for heavy, off-highway earthmoving. The dependable low cost performance of these "Eucs" has made them the standard of comparison for contractors, mines and quarries around the world. About 7 of every 10 off-highway Rear-Dumps are Euclids.

Although this unmatched experience may not be apparent when comparing specifications, it assures bonus benefits for Euclid owners—cost-cutting advantages not provided by comparable equipment. The greater use of Euclids results in faster complete field exposure to operating and maintenance characteristics under all conditions. It assures advanced design that pays off in more work-ability and minimum downtime on the job.

With Euclid's larger machine population, it's economically possible for Euclid dealers to provide more complete service facilities and ready availability of all factory engineered replacement parts. It's factors like these that enable owners to keep their "Eucs" operating at peak efficiency with unusually high availability and low production cost.

When you're considering Rear-Dumps, get facts and figures from your Euclid dealer—have him show you why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Your Euclid Dealer offers
the best equipment investment

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

3 types

for every digging purpose

TYPE "LS" . . . *Lightweight*

A lighter weight bucket designed for levee and drainage work

TYPE "TS" *General Purpose*

Unexcelled for Medium-Duty Service

TYPE "HS" . . *Heavy Duty*

A heavy-duty bucket for moving shale, blasted rock and other hard formations

All HENDRIX Buckets available without perforations

¼ to 40 Cubic Yards

HENDRIX DRAGLINE BUCKETS

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

BUCYRUS-ERIE COMPANY uses 14 Timken bearings at critical points in the crowd, main and swing machinery of the "River Queen" to take radial, thrust loads in all combinations.

Giant shovel swings 80-ton bites 300 ft., stacks 'em 100 ft. high, 14 TIMKEN® bearings take the loads

IT'S a whopper!—this Bucyrus-Erie 1650-B stripping shovel. It weighs in at over 2,400 tons, rises 140 ft. high. Taking 80-ton bites of overburden, it can pile up a "mountain" of 100,000 tons in a 24-hr. period. 15 electric motors power the giant, one of the largest mobile land machines ever built in the U. S. Yet one man in an air-conditioned cab controls the entire digging operation.

To take terrific radial and thrust loads 14 Timken® tapered roller bearings are used at critical points in the crowd, main and swing machinery. Their tapered design enables them to take any combination of radial and thrust loads. The full-line contact between rollers and races gives Timken bearings extra load-carrying capacity, too. And they shrug off shock loads; they're case-carburized to have hard, wear-resistant surfaces and tough, shock-resistant cores.

Timken bearings are geometrically designed to roll true. And they're precision-made to live up to their design. They virtually eliminate friction. And by keeping housings and shafts concentric they make closures more effective. Dirt stays out; lubricant in.

We even make our own electric furnace fine alloy steel, for extra quality control. No other American bearing maker does. For your No. 1 bearing value, specify bearings trade-marked "TIMKEN". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD

Transit Machine Features Help You Increase

Bucyrus-Erie Transit Machines offer a combination of standard features (optional at extra cost on other makes) that put you money ahead regardless of the front end you use. These features assure speed between jobs, stability, quick setups, accurate control of the load.

With a Transit Machine handling key jobs like those shown here, you can increase output on scattered, day-to-day assignments. Look over the jobs pictured. Find out how important features help Bucyrus-Eries make the tough jobs profitable. Then see your nearby Bucyrus-Erie distributor for the full story on these moneymakers. 460E58C

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

Power controlled lowering boom hoist, fully independent of all other functions is standard equipment on the 22-B Transit Crane, provides accurate placement of loads. This feature helped speed steel erection for a new manufacturing building in Cudahy, Wis.

"This machine is most useful on this kind of job where moving around is important," says the owner of the 22-B Transit Hoe shown here. The machine is digging footings for a new super market in Colorado Springs, Colo.

Profits

Spotting bituminous concrete for paved waterways, supplying gravel for fill, digging out soft spots and furnishing leach, this Transit Clamshell works on jobs inaccessible to other equipment. It is shown here furnishing fill for landscaping the West Springfield interchange of the Massachusetts Turnpike. Total cost of the contract is $2,300,000.

The owner of this 22-B Transit Crane is highly pleased . . . says it hasn't been idle since the day it was delivered. It is shown here placing precast floor slabs for a new fraternity house at Cornell University (Ithica, N.Y.).

A 22-B Transit Hoe excavates for drainage in construction of a ball field for Hendrick Hudson High School in Montrose, N.Y. Mobile, fast operating — this machine can handle a number of small jobs during the work week, and make them pay.

Excavating Engineer
founded 1905 OCTOBER 1958

A 2½-yd. Northwest 80-D, a 2½-yd. Manitowoc 3500 and a 4-yd. Bucyrus-Erie 88-B scale off the right abutment of the dam.

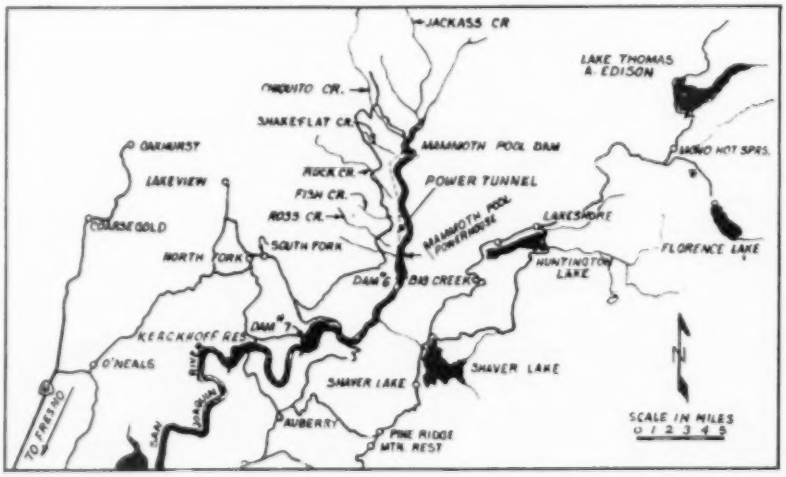
Hard Rock Digging at Mammoth Pool

by Ray Day

Electric utility firm teams up with contractors to speed new dam project in Sierras; Bechtel Corp. is prime contractor with Macco Corp. and Morrison-Knudsen Co. subbing tunnel work.

IN the rugged Sierra national forest, 80 miles northeast of Fresno, Calif., 126,000 new kilowatts of hydroelectric power are in the making for central and southern California. Problems of remoteness, logistics, hard-rock excavation and mountainous terrain are smoothing out, as muck-hungry power shovels bite into abutments and foundation of Mammoth Pool Dam. The upper San Joaquin River, which last spring rose to a peak flow of 15,000 cubic feet per second has been shunted through a diversion tunnel. Organization, equipment selection and job supervision are geared to provide maximum economy in building the new project.

Bechtel Corp., the prime contractor, has two contracts. One calling for construction of the dam and powerhouse was let on an invitation basis. Bechtel has a second contract calling for management supervision over other contractors who will work at Mammoth



Located in the famed Sierra "power quadrangle," Mammoth Pool Dam will be a rolled earth and rock fill structure. Its power tunnel will measure 7½ miles long.

Pool. For example, Bechtel exercises management supervision over the joint-venture firms of Macco Corp. and Morrison-Knudsen Co., Inc., who are building the river-diversion tunnel. Harms Bros., Sacramento, and Thomas Construction Co., of Fresno, also have a joint-venture access road contract, which is under the general supervision of Bechtel. The $49.6 million project will take 2½ years to build. It will contain the following main features:

1. Mammoth Pool Dam with spillway, power tunnel intake and intake gates.
2. Power tunnel with surge chamber and rock trap.
3. Diversion of Ross and Rock creeks.
4. Penstock, powerhouse with mechanical and electrical apparatus, auxiliaries and equipment.
5. Transmission line of 220-Kv.
6. Power supply and communication systems to the damsite.
7. Access roads and bridges.
8. Tunnel for temporary river diversion at the damsite, with permanent bypass works and controls for fish-water release through the tunnel plug.

Rush Job

Both the 1958 and 1959 construction seasons are critical years as far as Mammoth Pool Dam is concerned—this year perhaps the most important of the two. Chief reason is the fact that construction must be tailored to meet a treacherous river condition. The diversion tunnel is being built big enough to accommodate peak runoff flows from melting snow, but not to take frequent flooding of the San Joaquin which occurs during heavy fall rains. To have drilled a di-

(Above) A Gardner-Denver drill sinks a powder hole into rock to be stripped from the dam abutment. In background are the twin waterfalls of Dalton's Creek. (Below) A dozer blades down rock loosened by blasting to within reach of the shovels below.

A portable compressor powers Gardner-Denver jackleg type drills which sink sloping holes into a hard toe of rock remaining after crews blasted upper gorge walls.

version tunnel that size would have been fantastically expensive.

This was complicated still more by geological factors. While the foundation and abutment rock is blue granite, movements which occurred during the Ice Age covered the good granite with broken rock, talus and large boulders which must be removed down to sound rock. To do this, it will be necessary to go 150 feet below normal stream bed levels with a core trench cutoff and to do major stripping work on both abutments. At its base, the dam will be six times wider than its maximum height. Since Mammoth Pool Dam is in a narrow gorge, these factors will make for a congested work area, even though speed is decidedly important during 1958.

To complicate the situation, a major stream called Dalton Creek empties into the San Joaquin as a spectacular waterfall almost on the center line of the left abutment. A major diversion of this stream must be accomplished, along with diversion of two other creeks, to allow construction work "in the dry."

Pondering all these factors, Edison officials and Bechtel's Project Superintendent George Saul decided to schedule construction in such a way that it would whip these difficulties with a sufficient factor of time to spare. The plan shaped up like this:

1. In the first-stage construction step, preliminary abutment stripping, drilling of the diversion tunnel, construction of main haul roads and the diversion of Dalton Creek were done. These features were completed last June.

2. An earth and rock cofferdam has been constructed upstream to divert the San Joaquin river through the 28-ft. diameter, 2,100-ft. long diversion tunnel. This also was completed last summer. A downstream earth cofferdam also has been built to protect the work area from flooding, both upstream and down.

3. Excavation of the foundation and core trench is scheduled to be done, high-pressure grouting of foundation rock completed and the fill material for all zones brought back up to normal stream bed height before Nov. 1. The fill must be returned to this height by then so that if major flooding occurs, no serious damage can be done. If flooding should occur with construction advanced to that stage, a minor amount of cleanup work at the start of the 1959 work season will put the dam in shape to resume fill placement.

4. Final placement of all fill material will be done in 1959. In fact, 1959 will see more volume of earth and rock fill placed than 1958. Powerhouse construction, driving of main tunnels and final construction of access roads and bridges will be done. The project is planned for operation in spring of 1960.

Utility Owns Equipment

When *Excavating Engineer* visited the dam site, high-gear rock excavation was under way, with the above-listed stage 1 nearing completion. With the exception of a fleet of Caterpillar DW-20's which were planned for moving the earth core material, most major items of equipment had been brought in. An unusual twist is the fact that Southern California Edison is purchasing or renting the equipment. Bechtel's crews are operating and maintaining the machines, but ownership remains with Edison.

The job was shaping up as a battle with rock. If borrow pit problems develop in the future, they will be problems of selection rather than blending, because types of material are well defined. Rock excavation on the abut-

Here's a sample of granite slabs requiring secondary drilling. Jackhammer man balances precariously as he starts hole.

In short-haul loading, this 4-yd. shovel turned out 200 15-yd. loads per shift. In background is the turbulent San Joaquin River.

ments is typical of what will be encountered later, when the foundation and core trench are excavated. Methods and equipment shape up as follows:

Pioneering: Very little clearing, as such, was necessary. The abutments are in bare rocky gorge walls. Glacial movement in ages past have left deposits of talus, along with large granite boulders. Pioneering of the abutments was a job for dozers and rippers, working up high, shoving the material down to power shovels working on lower levels.

Cat D8's, a D9 and several International TD-24's with dozer blades and rippers were handling this assignment. The D9 was equipped with an Ateco ripping frame and a set of two straight Double J Breaker shanks and plates. An unusual feature about the Double J Breaker plate was its thin, triangular, free-floating knife edge, which entered the hardest ground with ease and broke the formation both vertically and horizontally. The device will not rip solid granite, of course, but it did rip out a large rocky section on a road close to the diversion tunnel portal which stymied the best of other rippers of conventional design. According to the foreman of this operation, he was being forced to go to drilling and shooting in an area where too much vibration could do severe damage—over the tunnel portal. When the Double J Breaker shanks and plates were tried, they worked with astonishing success. An H&L tooth point also is used on the shank points.

Ripped, loosened material was bulldozed a short distance and dumped over the edge of the bank to power shovels waiting below, which then loaded it out to hauling trucks. This combination ripping-dozing method was removing about 30% of the abutment stripping, getting down to semi-solid rock where drilling and shooting were clearly required.

Drilling and shooting: Since drilling and blasting were major items in one of the West's toughest rock formations, the biggest equipment consistent with desired mobility was selected for the job. Compressors included five Gardner-Denver 900's, four Gardner-Denver 600's, and three smaller 315-cfm machines. This compressor power was used either

Ten 15-yd. International rear-dumps handle bulk of rock hauling. This Payhauler is end-dumping rock on a stockpile which will supply fill for the upstream cofferdam.

(Left) High up on a wall of the gorge, a Cat D9 dozer equipped with Ateco hydraulic ripping frame loosens rock for stripping. (Center) View of ripping tool shows Double J Breaker shanks and plates. H & L tooth points are used on the shank ends.

by moving the smaller machines around in a mobile pattern, or by placing groups of compressors in strategic spots, dumping their combined output into large receivers and sending the air out to drill rigs through quick-coupled pipe and hose lines. The use of 900-cfm compressors guaranteed plenty of compressed air for the husky drilling equipment in use.

Drill rigs included eight Gardner-Denver machines on Air Trac crawler carriages. These machines moved around under their own power, with drive and steering mechanisms actuated by air tugger motors. There were three wagon drills on the job, along with several jackleg-type machines for slope-hole work in toes. And, for pioneering or secondary work in areas inaccessible to the other machines, there was an assortment of small hand-held jackhammers in the 55 to 80-lb. class.

Gardner-Denver drill steel, both in 600 and 700 series, was being used on the larger drill rigs, along with Brunner & Lay and Atlas-Copco tungsten-carbide drill bits. No set pattern of hole spacing was possible because the rock varied in hardness, and there were seams and fissures which made closer centers necessary. With 4-in. diameter bits on the biggest machines, however, centers could be spaced up to 12 feet. On 2½-in. diameter work, a 5x5-ft. grid was the customary average. Drill steel up to 24 feet long was in use to develop an optimum bank for power shovel loading. The holes were column loaded with either Atlas or Hercules powder, using gelatin-type explosives in the wettest spots and free-flowing bag powder in the dry areas. The rock was broken down fairly fine, so that it could be loaded easily by dippers of 2½ to 4-yd. capacity.

Broken material from the first drilling and shooting was to be used in building the first diversion cofferdams. Later on, broken rock from core trench excavation would be used as a part of the outer dam fill zones. There would also be an extensive drilling and blasting job, using the same equipment, for excavating about 390,000 cubic yards of rock in the spillway. This rock was to be broken out in rip-rap size and used for slope protection on the dam.

Large Excavators

Shovel loading: With the exception of the fine-graded clay core zone material, which was dug and hauled with tractor equipment and scrapers, all the other digging and loading at Mammoth Pool was done by power shovels. Southern California Edison purchased a new Bucyrus-Erie 88-B power shovel for the heaviest work. Equipped with a Cummins diesel engine and a 4-yd. dipper, the machine was put to work loading stripped material from the abutments. Later, it worked in the 150-ft. deep core trench and the spillway.

Along with this machine, there were several other rigs. A Lima 803 was moved in and assembled by a Lorain MotoCrane. There were two Northwest 80-D's with 2½-yd. dippers and a 2½-yd. Manitowoc 3500 shovel. Crawler mounted, these machines moved around as necessary.

A new fleet of hauling equipment also was purchased to service the power shovels. Ten 15-yd. International Payhauler trucks equipped with Cummins diesel engines and Allison torque-converter drives, were bought. There were three International 10-yd. end-dump trucks and three GMC trucks of 5-yd. capacity. The machines were routed in assignments to fit the shovels—for example, if the 88-B was digging in a high-capacity, short-haul muck bank, where it could turn out 200 of the big Payhauler loads a shift, more trucks were assigned to that shovel than to the other units. The shovel fleet, scattered over the job, was busy in the early stages with talus-slide and blasted rock loading on the abutments and loading of tunnel muck for road-surface crushing.

While drills and shovels worked on the abutments, and while the San Joaquin River roared at 6,000 second-feet down through the gorge, a very unusual use of equipment also was under way—the sampling of foundation type and depth by a floating churn drill. By drilling two 16-in. dewatering wells and two 8-in. piezometer holes before the river was diverted, Bechtel's and Edison's engineers were able to plot their probable drawdown curves for dewater-

(Right) Maintenance of haul road along the river, important to tire life of dump trucks, is handled by a Cat No. 12 grader.

ing the foundation area, to plan pump requirements and to have ready-made wells just as soon as the river is turned into the diversion tunnel.

To do this work, a Bucyrus-Erie 60-L water well rig was rented from Bill Belknap, drilling contractor of Reedley, Calif. The 60-L was mounted on a series of floating pontoons, lashed together to form a raft-like barge. Only 500 feet from the point where the holes were drilled, the river enters a narrow gorge in a series of roaring rapids so swift and treacherous that nothing entering the canyon can survive. An outboard motorboat, for example, was never seen again after it was swept down into these rapids. For this reason the drill barge was heavily anchored by steel cables leading to large trees and deadmen anchors on each shore.

The piezometer holes were drilled to a point about 70 feet below the stream bed. Dewatering wells were carried down to 120 feet. The 60-L rig used a tool string consisting of a Hubbard type drill bit, a 5-in. drill stem, jars and rope socket. All told, the string weighed about 2,950 pounds. Despite the inevitable pitching and tossing of the floating platform, the holes were drilled and cased without incident. In the process, valuable sampling data was obtained of the type of formations in the dam foundation area.

Newly built access roads give operating and service personnel a way into areas heretofore inaccessible by automo-

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Anchored to shore by cables, a 60-L churn drill explores the dam foundation below water. Two 16-in. dewatering wells and two 8-in. piezometer holes were drilled.

Unlined Tunnel Diverts River

by Ray Day

SPARKED by the necessity for holing through fast so the upper San Joaquin River could be diverted early, tunnel crews under P. M. Lee rose to the challenge at Mammoth Pool Dam. Drilling 13 feet per round and pulling an average of 11½ feet each shot, the miners chalked up about five rounds each 24-hour working day since the time the job began. Holing through was completed last spring.

The Mammoth Pool diversion tunnel is a 28-ft. diameter standard Edison Co. horseshoe type, 2,100 feet long on straight alignment. Passing through a blue granite formation under a rocky mountainside, the tunnel is unlined except for 40 feet at the inlet gate. It has a straight 4% down grade. When the dam has been completed to the point where the tunnel no longer is needed, it will be sealed off permanently with a 70-ft. concrete plug.

Tunnel crews complete five rounds daily in hurry-up drilling of by-pass for swift river.

Carpenter Supt. Larry Swanson (left) and Tunnel Supt. Whitey Lee confer outside the tunnel. Lee is ramrodding the job for Macco Corp. and Morrison-Knudsen Co.

Drilling had to be a single-heading operation because the downstream portal was in such inaccessible terrain, not served by any method of access. Superintendent Lee, ramrodding the job for joint-venture contractors Macco Corp., and Morrison-Knudsen Co., Inc., settled on a truck jumbo method of drilling to sink a 130-hole pattern in the tunnel face.

Mounted on the jumbo were 14 drill rigs, including a Gardner-Denver 141

Tunnel entrance shows ventilating pipe and Root-Connersville blowers. The 28-ft. dia. hole is 2,100 feet long and is unlined.

Cat No. 977 Traxcavator loads tunnel muck to Payhauler which transports material to a crushing plant to make road surfacing.

burn hole machine of 4-in. diameter, and 13 Gardner-Denver 93 drifters, For fast positioning and holding, the rigs were mounted on jumbo platforms on Ingersoll-Rand and Joy hydraulic jibs. Each driller was assisted on steel changes by a chuck tender helper. Both Brunner & Lay Rok-Bits and Atlas-Copco tungsten carbide bits of 1⅝-in. diameter were used to drill out the 130 holes in about 2½ hours. Drill bits were sharpened on bit grinders at the shop outside the portal; they lasted about 350 feet between sharpenings.

Air power supplied to the drills came from a stationary bank of three 900-ft. Ingersoll-Rand and four 900-ft. Gardner-Denver compressors, discharging through a central receiver and delivery pipe. Ventilating air was supplied by three Root-Connersville blowers, driven by Murphy diesel engines outside the tunnel.

45% Gel Dynamite

When a round of holes had been drilled, the pattern included burn holes, arch, rib, reliever, crown and lifter holes. These were loaded with Atlas and Hercules gelatin type dynamite of 45% strength. Delay exploders permitted powder men to control each shot, beginning with instantaneous exploding of the center burn holes, and progressing through millisecond delays to the roof, floor and wall lines.

Broken granite after each shot was loaded out by a pair of Eimco 105 mucking machines, working side by side. Seven Koehring Dumptors, their diesel engines protected against air contamination by Finco and Marstand exhaust scrubbers, hauled the granite to a dump point outside the tunnel, where it was transferred by a Cat 977 Traxcavator loading and International Payhaulers hauling to a rock crushing plant. The material now is serving the project in the form of access road surfacing.

The entire operation worked under protection of an excellent earth-rock cofferdam, with supplementary dewatering protection by Flygt and Marlow pumps. All in all, it was one of the best-organized, fastest-moving hard rock operations done in the Sierra "power quadrangle" in recent years.

Assisting Superintendent Lee were Rusty Ray and Oscar Peterson, walker superintendents; Harvey Holiday and Noel Bradley, shift bosses; Larry Swanson, carpenter superintendent; Keith Eastby, electrician; and Bill Switzer, project engineer.

Tremendous air power capacity is shown here in this battery of four Gardner-Denver and three Ingersoll-Rand 900-cfm compressors lined up in a stationary bank.

Operator Vernon Stone in cab of 1150-B dragline gets instructions from ground. General Electric low-power radio (three watts) is shown at upper left of photo.

Radio Speeds Dragline Stripping

A large operator in the Pennsylvania coal fields is using a low-powered two-way radio system to make more effective use of its strip mine draglines.

A three-watt General Electric mobile radio is mounted in the cabs of two massive Bucyrus-Erie 1150-B draglines used by A. E. Dick Construction Co., of Hazelton, to scoop a quarter of a million tons of overburden from a mine at nearby Traverton. Each of the draglines weighs 1,200 tons. The booms are 200 feet long and the buckets attached to the booms pick up 25 cubic yards (32 tons) with one scoop.

Because of the size of the equipment, movement from one spot to another is a critical problem.

A 60-watt mobile radio in a pickup truck operated by George (Pete) Jacoby, superintendent of the mine, is used to communicate with the three-watt sets in each dragline.

With radio, Jacoby is saving valuable time each day in coordinating the firm's activities.

Radio is used not only to help Jacoby talk to men high in the air in the dragline cabs but also to communicate with his office.

Saves Driving

"Right now," he says, "we're working about 160 acres near Traverton. When I'm out at the diggings and the main office at Hazelton has a message, radio gives it to me quickly. I don't have to travel three miles to the field office to take the call."

But more important, Jacoby points out, is radio's direct value in operation of the two scoopers. "These two machines work a quarter of a mile apart and they cost a lot to keep operating every day. With radio, I can tell the dragline operators where to cast their dirt and where to move, without having to stop them. I can supervise that whole 160-acre operation effectively without wasting the time of the strippers and my own time."

The G-E radio system was sold and installed by C. H. Chanel Co., Inc., Flourtown, Pa.

Superintendent George Jacoby guides the dragline movements from pickup truck equipped with a 60-watt radio.

Battery Care for Dependable Starting

by Robert H. Hawkins
Manager, Central Div., Service Dept.,
Caterpillar Tractor Co., Peoria, Ill.

MACHINE owners have come to expect convenience and dependability when starting diesel engines in all weather, regardless of temperature extremes. Some machines come equipped with gasoline starting engines while others depend on cranking the diesel with electric starting motors. Even gasoline starting engines often have direct electric starting systems. In fact, most electric starting systems are dependent on one source of power—the storage battery.

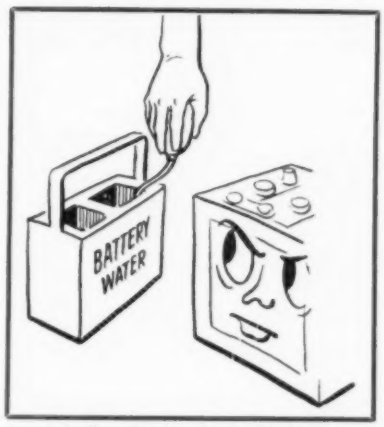
In cold or heat, rain or snow, dependable batteries are ready to supply the needed energy for cranking. If batteries are forgotten, neglected or mistreated, however, they may fail at a most critical time.

Let's see what a storage battery does. A storage battery is a reservoir used for storing energy for use at a later time. Electrical energy is put into it or drawn from it; but the actual storage process is a matter of chemistry.

A storage battery has a limited capacity (the quantity of electricity which can be taken from it in a given period of time) just as a water storage tank can maintain a flow of so many gallons per minute for only a certain number of minutes. The capacity of a battery (sometimes called its electrical size) is usually listed in ampere-hours, a term used to specify the amount of current a battery will deliver continuously for a definite number of hours or minutes. Capacity depends on how well the battery is constructed, its age, the size of the plates and how many plates are assembled in each cell.

Storage batteries run down when more energy is taken out than is put back in. Added electrical loads—such as lights, heaters and two-way radios—sometimes impose more drain on the system than can be replaced by the generator. There are other reasons. The first is age. After many hours use, the storage capacity is reduced. Second reason may be internal faults which continually drain off the electrical supply. Finally, improper maintenance and operation make a battery age quickly.

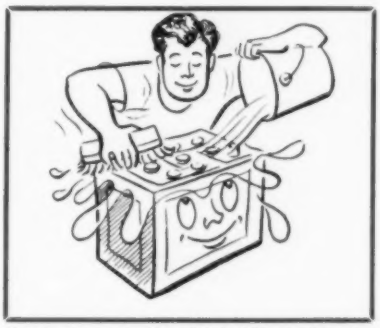
A most important step in extending battery life is a periodic check of the electrolyte or water level. Nearly all storage batteries have a reserve space



A periodic check of electrolyte level in the battery will help extend its life.

for water in the top above the plates, and most battery manufacturers recommend that water be added until it is ⅛ inch above the plates. Be careful not to overfill the battery because this allows the electrolyte to splash out and corrode all metal it contacts. Continued overfilling will result in so much loss of acid that the electrolyte may no longer be strong enough for the battery to deliver the required energy to crank the engine. If the battery requires water more often than once every two weeks, the charging rate is too high.

Wash the battery occasionally with a baking soda solution (one pound of soda to one gallon of water) to neutralize the acid which is present on the case, then rinse with a stream of cold water.



Wash occasionally with baking soda solution to neutralize acid on battery case.

Cleanliness also includes the terminals. Wire brush them until corrosion is removed and then coat them with petroleum jelly.

Maintain the battery in a normal state of charge—the specific gravity should be above 1.225—by keeping the genera-

Continued on page 55

Cold weather starting of diesel powered earthmoving equipment places heavy demands on storage batteries. Here are some maintenance tips on how to get peak performance.

The kind of care you give your battery year-round has much to do with reliable cranking power when you push the starting button on your engine during cold weather.

Lock Excavation Battles Quicksand

McDowell & McDowell move million yards of wet, treacherous material for foundations and chamber of Jackson lock on Tombigbee River, using scrapers, bottom-dumps and draglines.

CONSTRUCTION of the $21 million Jackson lock and dam, begun in October 1956 and scheduled to be completed in 1961, is another important phase in the modernization of one of the southeastern United States' most important waterways.

This route is the Black Warrior, Warrior and Tombigbee Waterway, entirely in Alabama, and extending 467 miles from the port of Mobile northward to points on the Mulberry, Sipsey and Locust Forks just above industrial Birmingham. Tonnage moved on this network of rivers in 1957 was 4,873,991 including limestone, petroleum products and crude oil, iron ore and concentrates, clay, earth, sand and gravel, iron and steel products, coal, pulpwood and logs, industrial chemicals and manganese, tin and nonferrous metals. Traffic is expected to increase another 1 million tons in the near future.

Under a modernization program begun just before World War II, an old system of 17 locks and dams that was constructed between 1888 and 1915 will be replaced eventually by a system of six locks and dams. Three structures in the new system have been completed. The fourth—Jackson—is under construction. A fifth lock and dam is contemplated. One lock and dam will be retained from the old system for the time being.

Farthest Downstream

Jackson will be the downstream lock of the entire system—its lower sill will be in tidewater when the river is low. The new lock and dam are being constructed on the Tombigbee River near Coffeeville, 23 miles northwest of Jackson and nearly 120 from Mobile. Jackson lock will replace locks 1, 2 and 3 of the old system. It will be 600 feet long, 110 feet wide with a lift of 33 feet. The concrete gravity dam will be used for navigational purposes only.

Federal work on the vital Black Warrior, Warrior and Tombigbee Waterway was authorized by Congress as early as 1871. All construction work and the operation of the waterway have been under the direction of the U. S. Army Corps of Engineers. Lifts in the old system ranged between 9 and 56 feet, with a 9-ft. depth over sills. Locks generally were 52 feet wide and 285 feet long. Four of the locks in the new system—Jackson, Demopolis, Warrior and the proposed Holt (No. 31)—will be 600 feet long and 110 feet wide.

Only the John Hollis Bankhead lock (formerly lock 17) will be retained from the old system. The uppermost structure in the system, the Bankhead lock was completed in 1915. Its two lock chambers are operated in tandem and have a combined lift of 72 feet. A larger lock will probably be constructed at this dam in time.

First step in the modernization program was taken in 1940 with completion of the Tuscaloosa (now the William

Marion 5-yd. dragline, working on the river bed at 47-ft. depth, swings dirt to within reach of a rehandling dragline on bank.

Big dragline on top of bank is Bucyrus-Erie 200-W whose 6-yd. bucket carried on 120-ft. boom dumps load on spoil mound.

Bacon Oliver) lock and dam to replace locks 10, 11 and 12. Located about 350 miles from Mobile, the new lock is 460 feet long and 95 feet wide and has a lift of 30 feet.

Completion of Demopolis lock and dam in 1955 marked the second step toward modernization. Demopolis lock, which has a lift of 40 feet, replaced old locks 4, 5, 6 and 7. It is located about 220 miles from Mobile, 3½ miles below the confluence of the Tombigbee and Warrior rivers.

Warrior lock and dam, the system's newest structures, were placed in service in 1957 and were completed this year. The lock replaces old locks 8 and 9. Located about 270 miles from Mobile, Warrior lock has a 22-ft. lift.

With Jackson lock under construction, the construction of one additional lock would complete the six-dam system. Proposed Holt lock and dam, which would be constructed about 10 miles upstream from Tuscaloosa, would replace locks 13, 14, 15 and 16. This lock would have a lift of 63 feet.

In addition to the benefit of fewer locks, the new system will be more navigable for larger tows. Locks will be larger and channels enlarged. Larger valves will permit locks to pass tows faster.

When *Excavating Engineer*, visited the Jackson lock site, the contractor, McDowell & McDowell, Nashville, Tenn., was working under a $732,913 contract to excavate 1,076,000 yards of unclassified material from the lock area.

McDowell & McDowell's excavation contract was the first let for the Jackson project. Others have since been let. A $14,666,487 contract was awarded last April to Al Johnson Construction Co., Minneapolis, Minn., for constructing the lock and dam.

Arriving on the job in December 1956, McDowell & McDowell imme-

Typical of the water problem at the Tombigbee River site is this spring welling up 90 feet from centerline of lock. Supt. H. G. Thompson points to the flow.

(Left) A 6-yd. dragline bucket empties on mound. (Right) Dragline loads mud from upstream end of lock into bottom-dump Euclids.

diately was confronted with a thorny unwatering problem. "It's a type No. 6 soil of clay and sand with a high moisture content," said Lloyd L. Pilkinton, McDowell & McDowell administrative assistant. "Our wellpoint system wouldn't work too well; all we could do under the conditions was just keep on digging. We needed 62,000 cubic yards of sand to stabilize our haul and access roads. The roads required much maintenance."

Jackson started as a scraper project, but the nature of the wet, sandy loam soon forced the contractor to take a new approach to the problem. During the driest part of the summer, McDowell made an all-out effort to remove the material with scrapers, but found it impossible to strip off more than the top 20 to 25 feet.

The lock excavation is 1,600 feet long and 230 feet wide at the bottom with 1 on 1½ slopes. Firm foundation bedrock was found as much as 40 to 70 feet below the surface.

As months passed the firm became faced with the problem of a shortening time limit for completion of the contract with the major part of yardage still to be dug.

Finally, to expedite the job, McDowell & McDowell rented a Bucyrus-Erie 200-W walking dragline from Walter P. Villere Co., New Orleans, La. The 225-ton walker was floated to the job site in October 1957 from New Orleans, via Mobile, on a single barge. The trip required 49 hours. To unload the 200-W, the barge was backed against a ramp constructed by a bulldozer. The dragline then walked to work.

The 200-W, using a 140-ft. boom with 6-yd. Hendrix perforated bucket, cast the treacherous material to a mound area on the land side of the lock site. The dragline excavated to a depth of 40 feet. The material—one observer likened

Wet, sandy upper layers of lock excavation are removed by scraper fleet. As material became progressively worse to dig, contractor made switch to excavation by long-range dragline and also to hauling of material by bottom-dump Euclid trucks.

it to quicksand—held hourly production of the 200-W to about 200 yards.

Crawler-mounted draglines were teamed with the 200-W. These included two rental rigs—a Marion 311-M model with 5-yd. bucket and a Lorain 820 with 2½-yd. bucket.

A fleet of four 17-yd. and eleven 13-yd. Euclid bottom-dumps were dispatched to the job about the same time as the 200-W. Nearly all of the excavated material was cast directly or hauled to spoil areas.

Approximately 350,000 yards were

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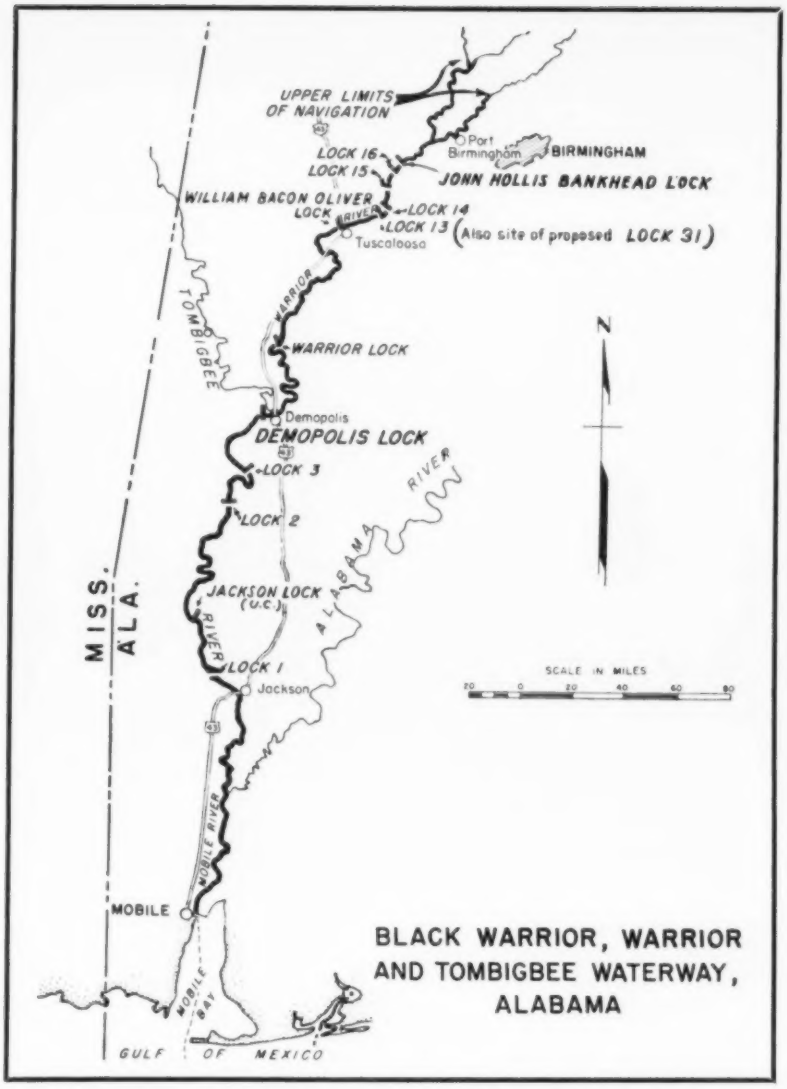
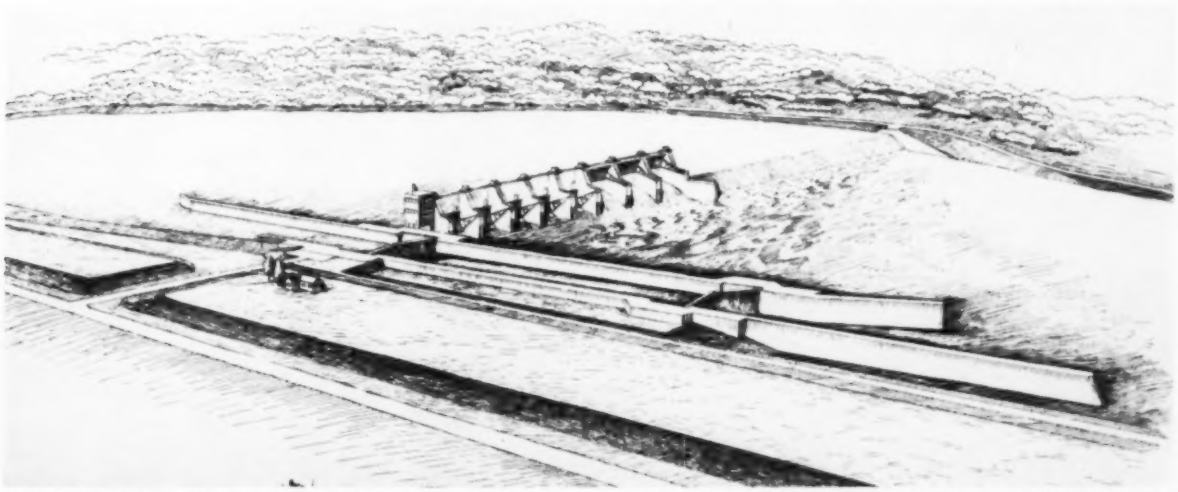


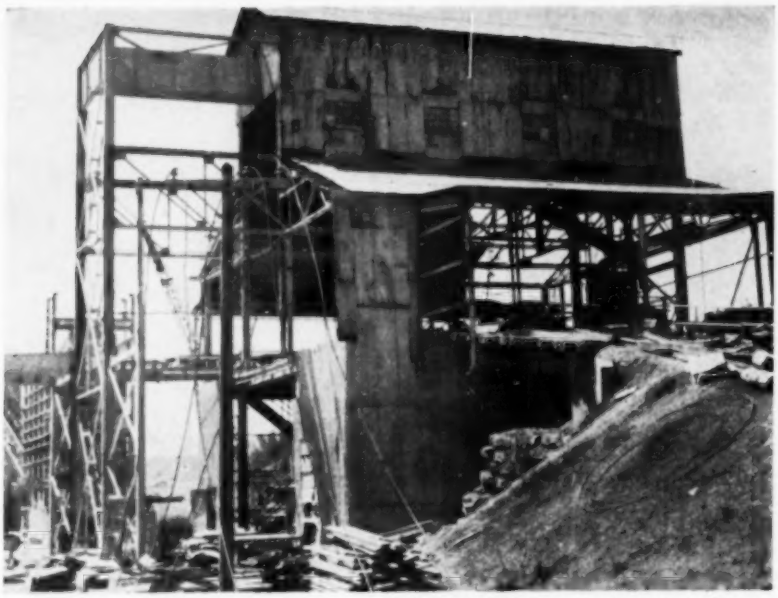
Winding waterway extends 467 miles north from Mobile on Gulf of Mexico to region north of Birmingham. Location of both permanent and obsolete structures is shown.



Artist's conception shows Jackson Lock and its adjacent dam. Lock will be 600 feet long, 110 feet wide with lift of 33 feet.

Torch Helps Dismantle Crusher

Metal removal torch helps firm cut away thick plates of huge 50-in. crusher bowl.



This five-story high building housed a 50-in. Worthington crusher that George P. Dysart, Inc., moved to a new location for Columbia-Southern Chemical Corp.

ADOPTION of a new tool for a seemingly impossible job by George P. Dysart, Inc., steel erection firm of Columbus, Ohio, has speeded up the dismantling of a 50-in. diameter Worthington gyratory crusher.

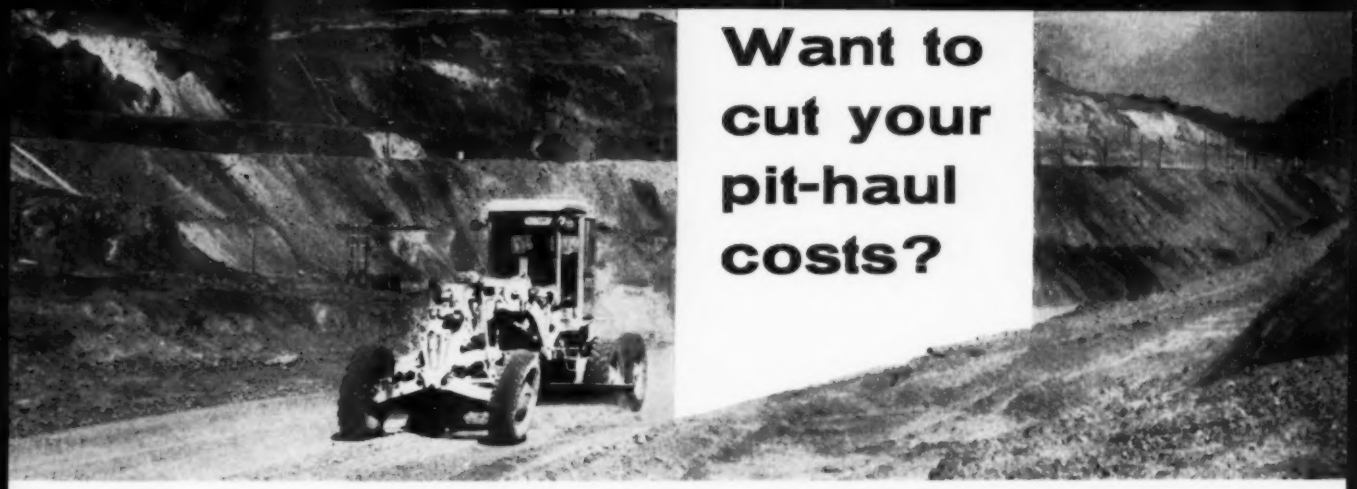
The five-story high crusher had been on the premises of the Columbia-Southern Chemical Corp., Fultonham, Ohio, for 40 years when the Dysart firm was called in recently to move it to a new location. Four stories above the ground, however, dismantling operations hit a snag. It was discovered that the crusher bowl—more than 30 feet in diameter and lined with heavy manganese plates measuring approximately 28 x 24 inches and 6 inches thick—had been fabricated for lasting permanence. The several hundred managanese plates had been grouted in place with zinc, and all effort to loosen them were proving unsuccessful. Although arc cutting electrodes were tried in the effort, they succeeded only in melting the metal while leaving it almost intact.

At this point, a representative of the Lincoln Electric Co., makers of the arc welding machine used in the first attempt, suggested the metal removal process of the Arcair Co., Lancaster, Ohio. The Arcair torch uses the melting power of the electric arc in combination with a jet of compressed air paralleling the electrode to blast the molten metal out of the way.

On the crusher job, a model H-3 general purpose torch with $\frac{3}{8}$-in. Arcair Copperclad electrodes was selected, with power from a 400-amp Lincoln welder and compressed air from a Jaeger Air Plus 105-cfm portable field compressor. Operators became quickly adept in handling the new tool, and the zinc securing the manganese plates was easily cut and gouged out. Workers then drove steel wedges behind the plates and forced them out.

(Below) Crusher bowl is lined with manganese plates. (Right) Operator using Arcair H-3 torch cuts away zinc grouting material which secures plates to bowl.

Since the Arcair process does not depend upon oxidation, the torch performs on those metals which do not oxidize readily, as well as on those that do. In addition, Arcair introduces less heat than conventional welding processes so that the physical properties of alloy steels such as manganese are unaffected.



Want to cut your pit-haul costs?

How 15-speed "blade" can help your haulers make extra pit-to-plant trips every day

You'll reduce the per-ton cost of hauling, boost pit output every day, by traveling your haulers at higher speed. Faster haul speeds are practical *only* when your pit floor, benches, and haul roads are kept clean, smooth, and well drained. The better your surface, the faster you haul ... the more trips per day, the lower your pit-haul costs.

To keep your haul routes in tip-top shape you need graders that can do maximum work. You need machines that can make heavier cuts, push bigger loads, work and travel faster ... machines that can always work your tough materials at, or near, full power. This requires a wider range, and more selective gear-ratios than most graders afford.

More speeds for full-power work

Only Adams* 80 to 160 hp graders give you the extra work-speeds you need. They provide 8 standard speeds forward and 4 reverse, plus 3 creeper gears (opt.)... that's 15 speeds in constant-mesh transmission.

For building and maintaining haul roads, ditching, and clean-up at pit, plant, and stockpile, Adams gives you 4 efficient forward working speeds. Other graders with 6 forward speeds have only 3 working gears ... often cannot develop full push-power at the faster speeds that are "just right" for the job.

Adams' 2 intermediate gears, 10 and 14 mph, are handy for light, fast blading, snow plowing, maneuvering and climbing tough grades. And travel speeds to 26 mph save time between grading assignments ... time that can be used for extra blade-work.

Up to 30% more push-cycles on one-way grading

Most graders have only 2 reverse gears ... about 3 and 7 mph. Adams has 4 reverse speeds — 2 for working, 2 for high-speed back-up. Adams' top reverse speeds (8 and 13 mph) pay big dividends. Often your operator works a 200′ to 400′ stretch, or even more, that is too short or too confined to make turning-around worthwhile. Instead, he backs-up. The Adams makes the reverse trip fast ... converts usually wasted travel-time to extra blade-work.

Creeper gears for added "muscle", precise control of grade

Three optional creeper speeds, 31′ to 160′ per min. (full power, 0.41 to 1.82 mph), afford a means to concentrate full engine-power for ripping-up and regrading old roadways, pioneering for exploration and new roads, clearing overburden of stumps and roots and working thru rocky ground. They eliminate the costly common practice of "slipping the clutch" at high rpm to get maximum power at slow speed ... reduce shock and clutch wear. Creepers also help you cut more accurate grades, and work in tight places.

190 and 135 hp POWER-*Flow*® Graders

For maximum push-power *at all speeds*, Adams POWER-*Flow* 660 and 550 torque-converter models give you the effective work-power of an *infinite* number of gear ratios, from 0.0 mph to 27 mph forward.

Any one of the 7 Adams graders — 190, 160, 135, 123, 115, 80, and 60 hp — will handle more work per $ investment. In any size, Adams model graders will keep your haul routes smoother — at less cost than any other method. Call us for full details on these modern graders built by LeTourneau-Westinghouse.

Adams graders can handle more of your type of jobs, save time and money with efficient interchangeable attachments. These include: *Scarifier* for ripping-up old roadways and rock-filled soil, *bulldozer* for spreading and casting dirt and road materials, *snow equipment* for clearing roads, *push-plate* for push-loading scrapers and starting balky haulers.

*Trademark G-1626-MQ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Mack 6-wheel dumpers pace the pavers on road-surfacing job. Used for a variety of heavy on- and off-highway hauling chores, these trucks, as well as Armour's other Macks, have set new performance records with . . .

down time less than

"Our contracts require us to take on all kinds of jobs, ranging from rock hauling to road surfacing to transfer of iron ore from ship to shore—and we require versatile trucks that enable us to complete these jobs swiftly and dependably.

"They're all tough requirements, but our 16 Macks have the stamina to handle these jobs . . . and they do it economically, with minimum maintenance, and less than one per cent down time," says Mr. John M. Reid, Treasurer, of Armour Excavating, Inc., of Philadelphia.

Armour is especially pleased with Mack's 20-speed transmission because it's built to give the best performance under all driving conditions, from city street to tough off-highway low-speed hauling.

Macks have what you need for dependable, profitable operation in on- or off-highway construction—maneuverability and ease of handling for fast spot-

Another of Armour's Macks dumping asphalt paving material. The combination of Mack's Balanced Bogie with Power Divider and the 20-speed transmission makes these trucks unexcelled for the roughest off-highway hauling, yet gives them the flexibility needed for open road operation.

one percent

ting and dumping; the ability to haul maximum payloads with low operating costs; and only routine maintenance requirements—sensible reasons why you can't afford *not* to operate Macks!

Your nearest Mack branch or distributor will be glad to give you on-the-job performance figures and the names of Mack users near you. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

LOOKING FOR A SAFE BUY IN USED EQUIPMENT?

This sign identifies the *safest buy* in used equipment—a "Bonded Buy" offered by your Caterpillar Dealer. Safest because you get a Guarantee Bond of up to $10,000, assuring you of satisfactory performance of all parts when you make a "Bonded Buy" on any used Cat-built machine.

Your Caterpillar Dealer also offers a "Certified Buy" with his written guarantee covering units of any make. Or a "Buy and Try" deal, which carries a written money-back agreement.

For the safest buys in today's used equipment market, see your Caterpillar Dealer today.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

CATERPILLAR

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BEST BUY IN NEW AND USED EQUIPMENT

News from the Field

Appoint Road Commissioner

Ellis L. Armstrong, of Salt Lake City, Utah, has been named Commissioner of the Bureau of Public Roads, U. S. Department of Commerce.

Armstrong, formerly director of highways for the state of Utah, will take office this month, becoming second in command to Federal Highway Administrator Bertram D. Tallamy in administering the vast federal-aid highway program in the United States and its territories.

The post of commissioner has been open since the retirement last year of Charles D. Curtiss after 38 years of service with the bureau. Since that time Tallamy's chief assistant has been Deputy Commissioner and Chief Engineer Francis C. Turner.

Armstrong, 44, was born in Cedar City, Utah, and was graduated from Utah State University in 1936 with the degree of bachelor of science in civil engineering. He did postgraduate work there and also at Colorado A. & M.

A specialist on heavy construction, Armstrong was a design and construction engineer with the U. S. Bureau of Reclamation from 1936 to 1953.

In 1953 he was loaned to the State Department for assignment to Egypt as a special consultant on the High Aswan Dam. Subsequently he became project engineer on the St. Lawrence River power project with private consultants for the New York State Power Authority.

Although his principal activity has been concerned with heavy earthwork, embankments, dams and excavation, all of the projects involved a great deal of highway design and construction.

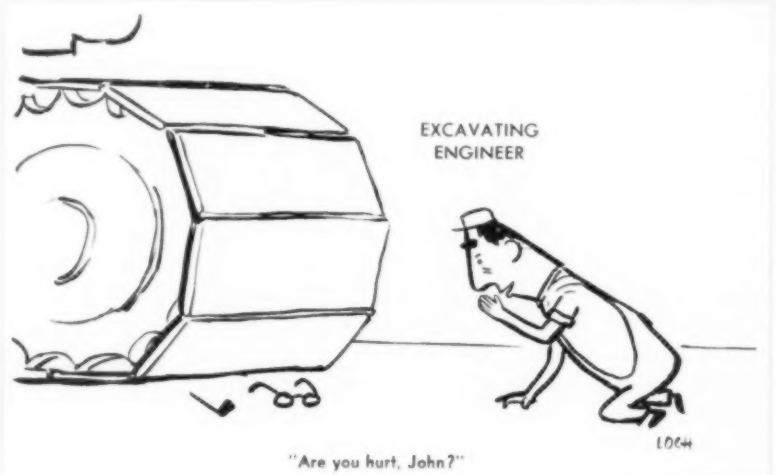
In May 1957, he was appointed director of highways for the state of Utah and has been directly in charge of administering the greatly expanded highway program in that state.

Announce Bridge Design Awards

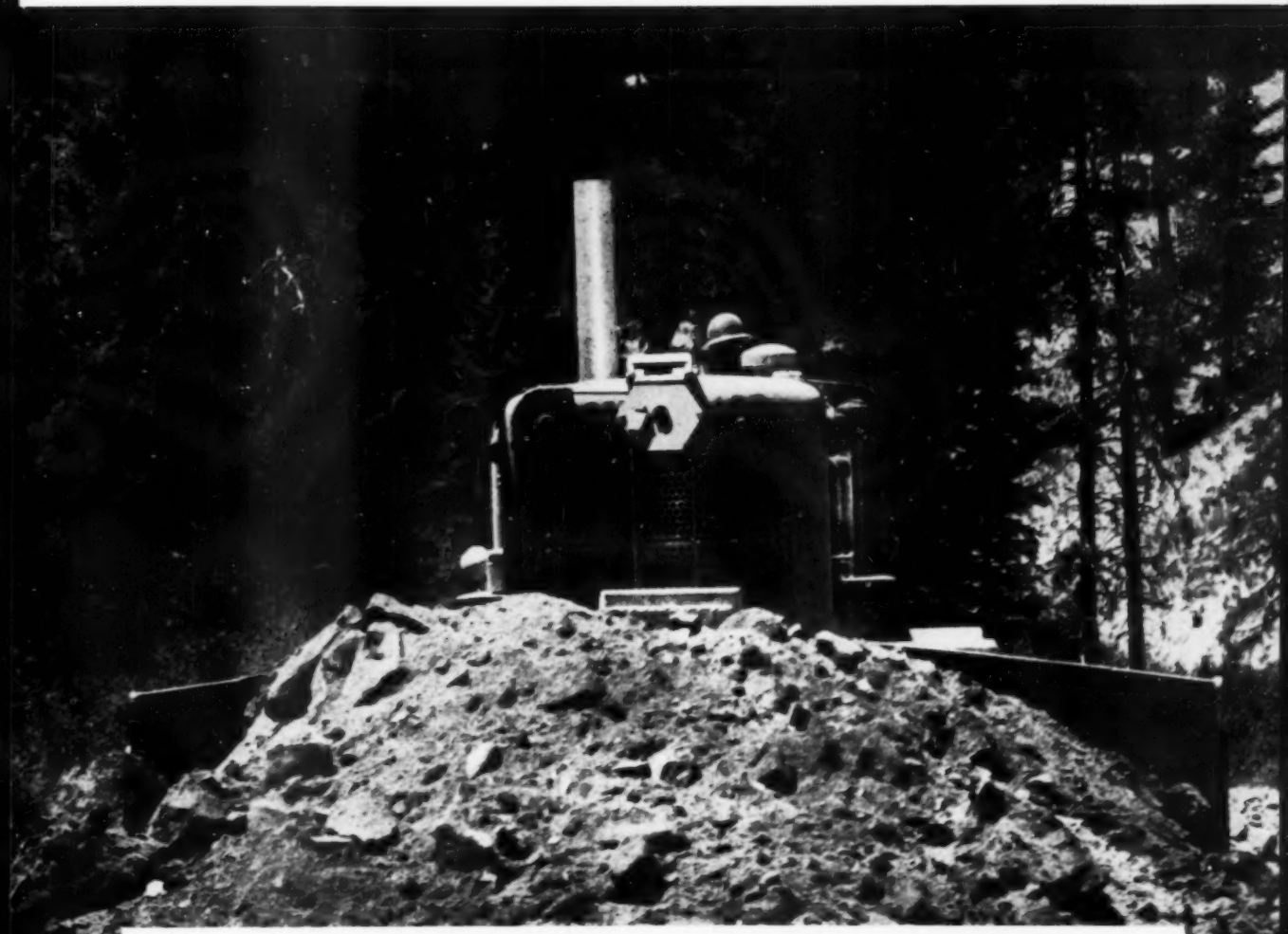
Awards announced by the Lincoln Arc Welding Foundation in a recent welded bridge design competition indicate that taxpayers are getting a break on their highway money being spent for bridges. The award designs, made for welded bridges now being built on the new interstate and defense highways, not only showed substantial savings in steel and cost, but also indicated that welded bridges were more beautiful and easier to maintain than riveted structures.

Farland C. Bundy and Charles S. Matlock, engineers with the Bridge Div., Texas Highway Dept., Austin, Tex., received the $10,000 first award in the recently judged $50,000 bridge design competition which was sponsored by the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio. Bundy and Matlock shared the award for the design of

Continued on page 36



"Are you hurt, John?"



THE TAKE-CHARGE D9

—built big and tough for the big, tough jobs

- 320 HP at flywheel.
- 30-ton weight.
- Exclusive Caterpillar oil clutch — plates cooled and lubricated with oil, rarely need adjustment.
- Optional heavy-duty torque converter transmission.
- Heavy-duty steering clutches with finger-tip steering. Power-boosted controls.
- Extra-rugged frame and final drive.
- Massive 7-roller track frame.

These are just the bare facts. No words and pictures can begin to describe the Caterpillar D9 Tractor. Engineered and built to take charge of any job, it's big, tough — and economical in the long run. See what it'll do on *your* job. Have your Caterpillar Dealer put it through its paces. That's all it asks.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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FIND YOUR CATERPILLAR DEALER IN THE YELLOW PAGES

KING OF THE CRAWLERS

(Left) Buffalo Bayou Bridge in Houston, Tex., a 668-ft. continuous plate bridge, won first place in the Lincoln Arc Welding Foundation design competition. (Right) A box girder arch bridge on the Dallas-Fort Worth turnpike won a second place award.

News . . .

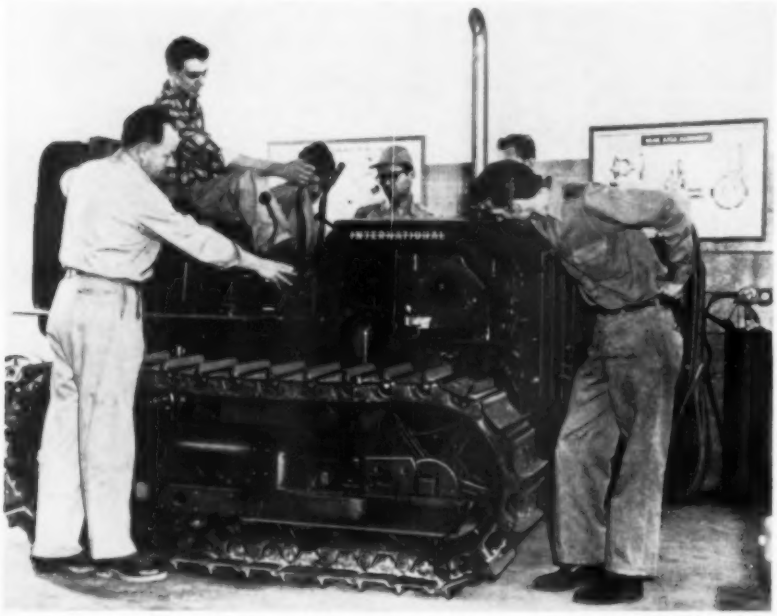
Continued from page 34

the recently completed Buffalo Bayou Bridge in Houston, Tex., a 668-ft. all-welded continuous plate girder bridge. Designs were judged on the basis of economical use of labor and steel, appearance, cost, general quality of detail and other advantages of welded construction.

The designers described their bridge as "one of the longest welded bridges" and one on which "unit prices bid were among the lowest." The bridge has also received recognition in a competition for the most beautiful steel bridges erected in 1957, sponsored by the American Institute of Steel Construction.

The Lincoln Foundation made two second awards of $7,500 each. Co-designers Dale C. Hoffman and Dwight H. Sparks of Columbus, Ohio, received one for the design of a four-span, 398-ft. haunched girder bridge. The designers estimated that a comparable riveted bridge would have required 24% more steel.

A team of turnpike engineers in Dallas, Tex., Joe C. Bridgefarmer, Douglas A. Nettleton and William Llewellyn Powell, received the other award for the design of an all-welded arch bridge on the Dallas-Fort Worth turnpike. The 192-ft. span of four welded box-girder arch ribs is claimed to be the first bridge of this type in the United States. Ease of welded fabrication for this type structure permitted completion of fabrication and erection in three months and four days. Both of the second award designs emphasized the contribution of welded construction to the aesthetic requirements of the particular sites for which they were planned.



Crawler tractors like this International TD-6 are taken completely apart, adjusted and reassembled by students at Greer Institute's mechanics school at Wilmington, Ill.

Mechanics School to Open

Greer Technical Institute, which 20 months ago pioneered a school in the Midwest to train earthmoving equipment operators and which has since turned out over 1,000 graduates, will soon pioneer another type of school to train skilled mechanics for the earthmoving industry.

The school will be inaugurated in Wilmington, Ill., about 60 miles from Chicago. The course will require 540 hours and will be spread over a 10-week period. The training will cost the students about 54 cents per hour.

Erwin Greer, founder of the school, claims the new training will be the first of its kind offered in the United States. "We're calling this new course construction equipment mechanics," he said. Our aim is to provide practical and technical training to students to help meet the increasing needs of the construction industry. We have surveyed the industry and find there is a lack of skilled and competent labor required to service and maintain earthmoving equipment.

The course will run 5½ days per week, 10 hours per day. It will include 60 hours instruction in each of the following departments: diesel engines, fuel injection system, torque converters, final drives, steering system, tractor tracks, cable controls, welding and bulldozer rebuilding.

Over $100,000 has been spent by Greer to provide modern class rooms and completely equipped shops located in the downtown area of Wilmington. All but two of the training programs will be held in this convenient location. The welding and bulldozer rebuilding courses

Continued on page 38

At the North Jersey Quarry Co., Summit, N.J., a Bucyrus-Erie 4½-yd. 110-B loads out blasted rock for hauling to crusher.

PROFITABLE EXPERIENCE

brings customers back for more

When final operating figures are tallied, it's the Bucyrus-Erie that produces more at less cost per ton . . . makes *repeat buyers* of customer after customer.

There are good reasons why Bucyrus-Eries give this kind of performance. Bucyrus-Erie-improved Ward Leonard controls have revolutionized shovel operation by giving operators immediate extra torque to meet every load, faster acceleration and deceleration on every move. Their consistency has been job-proved. They require little maintenance.

Bucyrus-Erie's exclusive two-section boom with tubular dipper handle provides unusual strength with minimum weight. Twin dual hoist concentrates power at the point of greatest resistance to steady the dipper and pull it through the toughest banks.

From the treads up, Bucyrus-Erie electric shovels are heavy-duty units designed to give you greatest output at lowest cost. Write today for complete information on the 4½-yd. 110-B, 6-yd. 150-B or the 8-yd. 190-B. Bucyrus-Erie Company, South Milwaukee, Wisconsin.

186L58C

BUCYRUS ERIE

MODERNIZE to economize!

To service construction equipment working in a 700-ft. deep section of Arizona's Glen Canyon, this lube truck is lowered by a special 40-ton capacity highline.

News . . .

Continued from page 36

will be held at the Heavy Equipment Operators School at Braidwood, Ill., just 4 miles away from the site of the new Construction Equipment Mechanics School. It is expected heavy enrollment will come from contractors and distributor organizations.

Airlift Lube Trucks to Worksite

In a remote corner of Navajo Indian Reservation, 700 feet of yawning, steep-walled space above the Colorado River is the unusual, though routine route followed by service-purveying trucks at the Glen Canyon Dam construction project in north-central Arizona. At specific time intervals 'round the clock, sling-suspended International model ACF-172 lubrication trucks are lowered by special, 40-ton capacity highline to opposite embankments at the bottom of the river-cut gorge.

Driver-servicemen, dropped via "skips," employ the trucks in servicing dump trucks and crawler tractors spotted at riverside vantage points. At completion of lubricating labors on equipment engaged below in excavation and movement of earth and rock for spillways and water diversion tunnels, the lubrication trucks are hoisted to the top of the 1,100-ft. wide canyon. Between drops to the canyon floor, the units attend other equipment at work on both rims of the damsite.

Merritt-Chapman & Scott Corp., New York, N. Y., is prime contractor for the $108 million Bureau of Reclamation dam and powerplant undertaking. Rolling equipment being used by the contractor in the seven-year project includes 97 International units. Among them are 22 model 95 Payhaulers and 11 TD-24 crawlers. When completed in 1964, Glen Canyon will be the second highest dam in the United States. Also currently under construction 870 feet downstream from the dam axis is a river-spanning 1,271-ft. highway bridge which will be the longest and second highest single-span steel arch bridge in the nation. Contractor for the $4 million project is the Kiewit-Judson Pacific Murphy Co.

Push-Button Cement Plant Opens

Alpha Portland Cement Co., officially opened its new multi-million dollar cement plant at Lime Kiln, Md., in September. The plant is described as the nearest thing in the cement industry to push-button operation.

The new plant is intended to provide fast around-the-clock service to users of cement in nearby Baltimore, Md., Washington, D. C., and surrounding areas. It now becomes the closest cement plant in Maryland to the nation's capital.

In full production, the Lime Kiln plant will have a capacity of 2,250,000 barrels of cement a year. It will produce all standard types of high quality Portland and mortar cements by the wet process.

The new facility, according to Alpha President Robert S. Gerstell, will be one of the most efficient cement plants in the country when production is well under way. It is the third largest Alpha plant, and ninth in the company's network covering widely scattered points east and slightly west of the Mississippi.

The plant is located on a 1,000-acre tract of ground containing enough raw material—Frederick limestone—to last for 100 years at peak annual production. It was built over a two-year period by McDonald Engineering Co., Chicago, Ill.

With many processes automated and

Alpha Portland Cement's push-button operated plant at Lime Kiln, Md., will have an annual capacity of 2¼ million barrels.

remotely controlled, the plant is expected to set new standards in the industry for low operating and maintenance costs. All movable equipment has a hoist overhead for easy labor-saving handling. Approximately 140 persons are employed by the plant.

Especially clean, the new installation is designed for maximum safety as well. Special safety features and guards of all types have been built in the plant wherever there is any possibility for an accident. The company has invested nearly $1 million in a dust control system that is reported to be among the most effective in the cement industry.

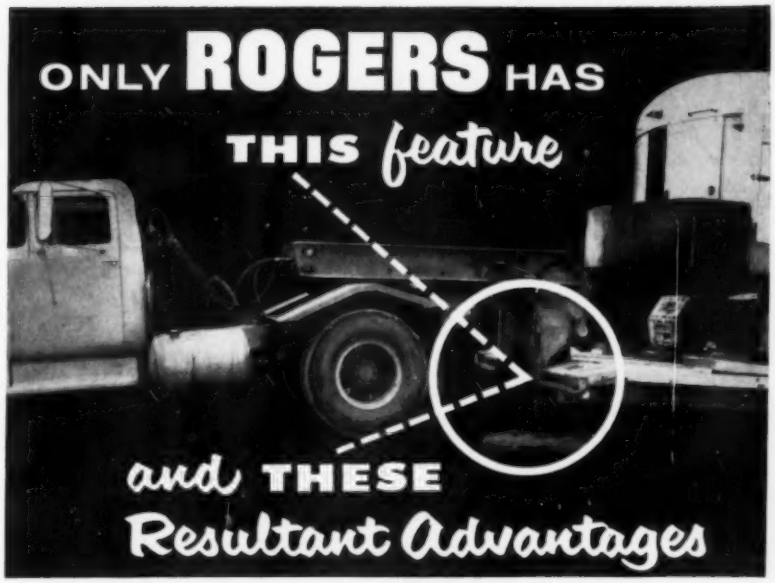
Production of the plant is earmarked for ready-mix concrete plants, concrete products plants, dealers and contractors within a shipping distance of roughly 150 miles.

Extra fast delivery—even overnight service to points as far from the plant as Richmond, Va.—is made possible by a new system of packing and shipping the plant's cement. Using this new push-button system, the plant can bulk load three railroad freight cars, simultaneously.

The entire loading system is electrically controlled. Bulk cement is moved by air pressure through pipes and air slides. Packaged cement moves on conveyors rather than small hand trucks.

Completion of the Lime Kiln plant climaxes a three-year modernization and expansion program involving an estimated total expenditure by Alpha of approximately $28.6 million. Addition of the Lime Kiln plant raises the company's overall production capacity to 15,050,000 barrels of cement a year. This amounts to a 21% increase since World War II.

"Look—with me my head don't matter so much."



This exclusive feature makes the Rogers HYDRAU-LIFT *more than* a detachable gooseneck trailer — one, in fact, that performs operations no other trailer can handle.

IT *detaches, loads* and *reloads* in as little as 3 minutes.

IT *loads from the front,* making turning on deck unnecessary.

IT can travel *with deck lowered or raised* to pass under or over obstructions thus avoiding detouring, moving ahead and reloading.

IT can *discharge overhanging loads* quickly and simply.

IT *raises tractor or trailer* wheels, while attached, to easily service tires or attach chains.

ITS *flat, unobstructed gooseneck* provides a convenient place on which to carry dippers, bulldozer blades, etc.

IT *requires no winch,* saving up to $900 in cost and 1000 pounds in overall weight.

PATENT NO. 2690210

EXPERIENCE builds 'em

ROGERS HEAVY DUTY Gooseneck Trailers

PERFORMANCE sells 'em

PACKY SAYS:

"It's 'almost like lifting oneself by his boot straps' as the literature explains."

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STANDS UP TO SEVERE USE

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One word describes a Hayward — *ruggedness.* Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

Equipment You Ought to Know About

Special Truck Bodies

Manufacturer: Reading Body Works, Inc., Department EE, Reading, Pa.

Claims: A fleet of job-planned truck bodies has been built by Reading for use by an eastern contractor. Four different types of vehicles have been delivered to James D. Morrissey, Inc., Philadelphia, Pa., for use in road building and other construction projects.

Each of the four body types required unique compartment arrangements and equipment. Special bodies were made for use by mechanics, foremen, engineering and survey crews and for trouble-shooters.

To facilitate rapid communications between working parties on projects which often cover several miles, all units carry two-way radio equipment in special compartments. Other watertight compartments were specially divided and partitioned with shelves, bins and trays to transport parts and materials.

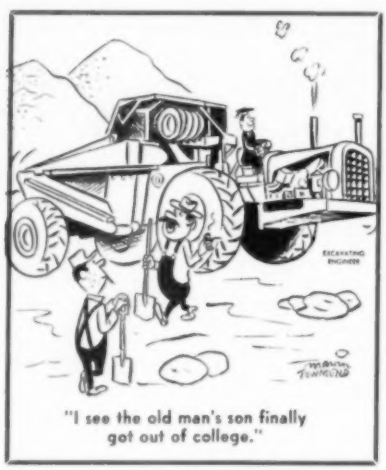
All bodies have a special rear platform-bumper and tailgate combination. The bumper protects the body from all angles. The tailgate drops flush with the platform to facilitate loading.

All vehicles are equipped for installation of a 4-in. machinist's vise.

Bodies used by mechanics have specially ventilated compartments for oxygen and acetylene burning outfits. The burning gear can be removed from the vehicle in minutes and moved closer to a job, or it can be operated in the truck.

Designed for maintenance and servicing of all kinds of heavy construction equipment in the field, trouble-shooter bodies are mounted on a four-wheel drive Dodge chassis. The vehicles transport tools and parts—including a master mechanic's tool kit—to replace and repair construction equipment on the scene.

While the trouble-shooters were built for unusually rugged use, the engineering and survey units called for the direct opposite needs. These bodies were made to transport, among other tools, transits, levels, targets and tripods—relatively light but delicate instruments. All compartments are cushioned with rubber to protect equipment en route to locations in all types of undeveloped terrain.



"I see the old man's son finally got out of college."

Foremen's trucks include a special panel enclosure with two windows on each side for wide vision and folding seats for personnel. A ball bearing, telescopic roof gives weathertight protection to the body load area. Outside compartments are adapted to carry instruments, tools and equipment.

Bucket Teeth

Manufacturer: Electric Steel Foundry Co., Department EE, 2141 N.W. 25th Ave., Portland 10, Ore.

Claims: A new Esco point design offers excellent penetration and long life in such tough formations as hardpan and tight river bottom gravel.

This new product, called the RDX point, was originally developed for ripping applications but is equally effective in bucket and shovel operations. This rugged point with narrow cutting width gives the machine operator a tooth with pickpoint penetration that lasts the life of the point. The tapered wear pattern keeps this point exceptionally sharp due to its narrow ribbed design.

In field tests, the RDX point has produced excellent results. Working in tight, abrasive formations, the pick point design produced 141 hours of sharp, penetrating service before being replaced.

Rock Depth Indicator

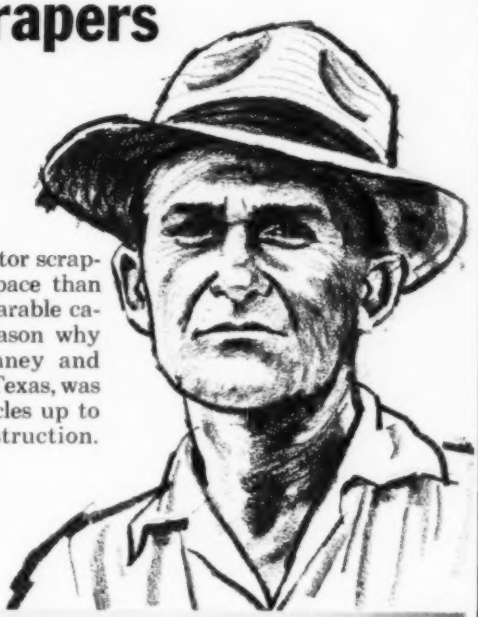
Manufacturer: Geophysical Specialties Co., Department EE, 4206 Longfellow Ave., Minneapolis, Minn.

Claims: A new technique for locating rock without the necessity for drilling has been announced by Geophysical Specialties.

Using sound waves in the earth pro-

Continued on page 42

Cuts cycle time 41% on watershed dams with Allis-Chalmers motor scrapers



Allis-Chalmers TS-260 motor scrapers turn around in less space than any other scraper of comparable capacity. That's one big reason why G. V. Walker of McKinney and Wheelock Co., Corsicana, Texas, was able to reduce hauling cycles up to 41 percent on dam construction. Here are the facts—

G. V. Walker, Supt.
McKinney and Wheelock Co.

These Allis-Chalmers TS-260 motor scrapers save 42 miles of extra travel for McKinney and Wheelock Co. on a Texas earthfill dam because of their ability to make full turns after the dam became too narrow for other scrapers to turn on.

3 earthfill dams . . . 300,000 cu yd moved

Superintendent Walker reports a total of 300,000 cu yd of material moved on three recent Texas watershed dam jobs. On these operations there were three Allis-Chalmers TS-260 motor scrapers. The shorter turning radius of the TS-260's (full turns in 30 ft) allowed Walker to build the dams higher before the scrapers were forced to travel the full length of the dam to turn around.

Saves 42 miles of extra travel

On Project 26, for example, Walker's TS-260's were able to carry 162 more short-haul loads because they continued to make full turns after the dam became too narrow for other scrapers to turn. When the dam reached that critical height, other scrapers required a total haul-return distance of 550,800 ft. The distance traveled by the TS-260's totaled only 324,000 ft . . . saving 226,800 ft or 42 travel miles.

Loaded TS-260 powers its way upgrade to the rising dam.

Besides TS-260 turn-ability, Walker likes the positive, hydraulic, double-action bowl jacks that permit down pressure for fast penetration of hard material. The curved cutting edge breaks up sandy Texas clay, "boils" it into the bowl. Material loads easier and fills every corner for maximum yardage each trip. Positive forced ejection makes fast and accurate spreading.

All in all, G. V. Walker sees his Allis-Chalmers dirt-moving fleet as a real money-maker and work-saver. See for yourself by asking your Allis-Chalmers construction machinery dealer for an on-the-job demonstration. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

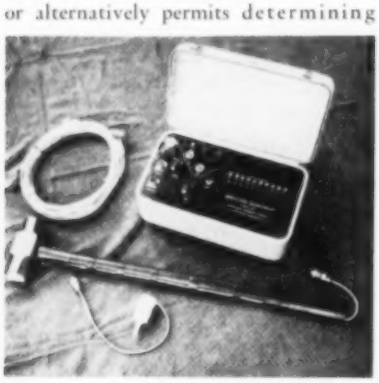
Look ahead... *move ahead* ...and stay ahead with **ALLIS-CHALMERS**

FOR 50 YEARS...
Finest in the Field!
Rely on the bucket contractors rely on. The Omaha Dragline Bucket gives full load with every cast. Perfect balance makes it easy to spot dump. Alloy steel cutting teeth stay sharp, tough and ready. Strike pay dirt now! Complete information and specifications await your letter.
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.
OMAHA
DRAGLINE BUCKETS

Equipment . . .

Continued from page 40

duced by an impact on the ground surface, the MD-1 refraction seismograph permits determination of depth to bedrock with an accuracy of 5 to 10%, or alternatively permits determining



whether or not rock exists within any specified depth range from the surface to 50 feet or more.

Simple, rapid operation offers the mine or quarry operator a means for locating new quarries, extending present ones or estimating stripping costs, all with major reductions in exploration expense.

The refraction seismograph works on the principle that sound waves from a sledgehammer blow (or explosive, if preferred) will travel along different paths and at different speeds through the subsurface, depending upon such things as the nature of the material, the depth to bedrock or consolidated material and the presence or absence of bedrock. The model MD-1 measures the time interval required for the waves to travel from the source to a sensitive sound detector. Both source and detector are located at the surface; no drilling is required. Time intervals are measured for various distance intervals, up to a few hundred feet. The desired subsurface information is then quickly calculated.

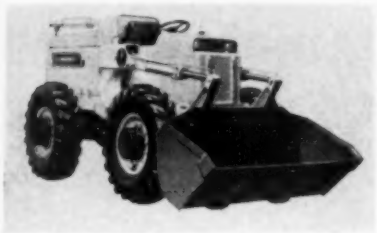
Waterproof Field Books

Manufacturer: J. L. Darling Corp., Department EE, Browns Point, Wash.

Claims: Darling produces a complete line of engineer's field books, tally sheets and maintenance record charts for use outdoors under wet weather conditions. The paper is made completely waterproof by chemical impregnation. Wet or dry, it retains clean and sharp the marks made by even the hardest pencil.

"Rite in the Rain" standard printed forms make it possible to write permanent field records under the most severe conditions. An engineer's field book, 4⅝ x 7 inches, is in wide use by contractors, mining personnel and surveyors. Special printed forms are also made to order.

Tractor Shovel



Manufacturer: Frank G. Hough Co., Department EE, 708 Seventh Ave., Libertyville, Ill.

Claims: Hough has introduced a four-wheel-drive, rubber-tired tractor-shovel with 7,000 pounds carry capacity. The new model H-70 loader will replace the model HH Payloader.

Features of the H-70 include more power, more traction, stronger components, greater protection against dirt and dust, more efficient torque converter, complete power-shift transmission, power-transfer differentials, power-steering, pry-out bucket action, safety boom arms, power-boosted brakes and numerous refinements.

New and more powerful gasoline and diesel engines provide from 105 to 110 hp. Diesel engines are available in either 2 or 4-cycle types.

Improved weight distribution provides an additional 1,500 pounds of weight on the rear wheels making possible better traction and greater digging effort.

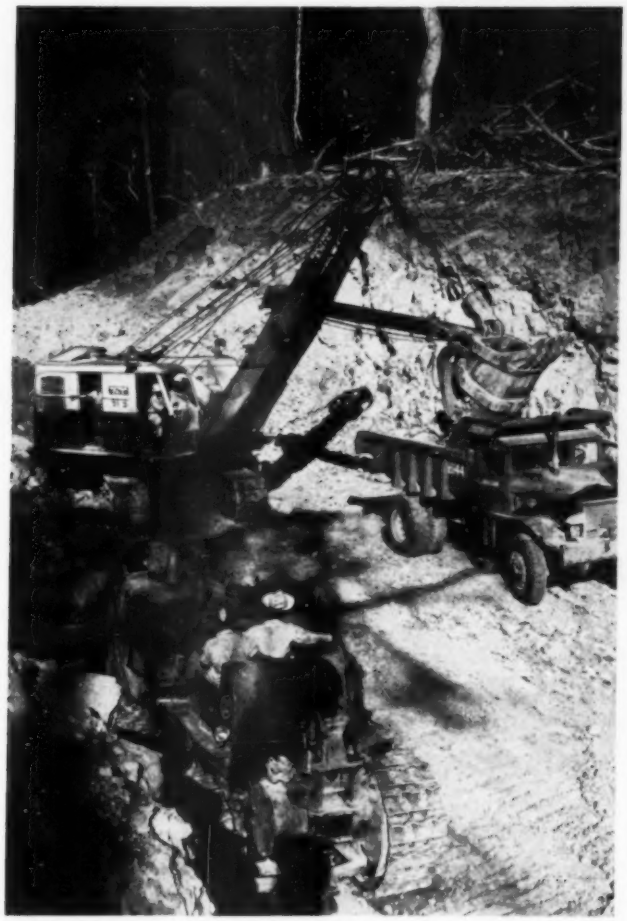
Heavier, stronger components include the main frame, boom arms and bucket linkage. The axle assemblies are from 40 to 80% stronger and additional axle width increases the stability of the H-70. These improvements aid productivity.

To assure the fullest protection of the engine when operating in dusty conditions, the H-70 has a triple air cleaner system with a precleaner and two oil-bath air cleaners. A cartridge-type oil filter is built into the hydraulic reservoir. Similar filters protect the engine oil, the transmission and torque converter oil. The front service brakes are sealed to keep out dust, dirt and foreign matter.

A new, larger torque converter is

Continued on page 44

Faulty Replacements Cost Contractors Thousands of Dollars Annually in Downtime



At Bucyrus-Erie, specifications for molding and core sands — permeability, compression strength, etc. — are rigidly adhered to in the production of castings. Here, a laboratory technician uses an electronic meter to determine the PH (acid-alkaline ratio) of the sand mixture.

Even though you usually do not consider the metallurgical makeup of a replacement part for your Bucyrus-Erie shovel or crane, it's an important question. But it's one you won't have to be concerned about if you buy parts from your *authorized* Bucyrus-Erie distributor.

Bucyrus-Erie spends many thousands of dollars every year in testing and developing materials for better wearing qualities under specific types of service. As a result, you get better shovels and cranes — and better parts — than were ever before available.

To make these quality parts available to you, Bucyrus-Erie Company annually *consigns* parts stocks worth millions of dollars to local distributor service shops — all built to original equipment specifications. No other manufacturer of shovels and cranes does so much to assure you of complete service.

Bucyrus-Erie also holds factory training courses to show your local distributor servicemen new ways to provide better service, new ways to make old machines perform at peak efficiency.

When you need repairs, don't gamble on "will fits". Call on the people who are best qualified and *most interested* in doing a good job. The money you save by corner-cutting may be only a down payment on losses you can suffer from breakdowns on key jobs. 2M58

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

Your nearby Bucyrus-Erie distributor has a complete stock of original equipment parts for your machine. Fast follow-through on parts orders is a specialty of his. He's ready to give you speedy service right out on your job.

Got A Tough Digging Job?

● SOFT GROUND

● DEEP WATER

● NARROW SPACE

● STEEP HILLS

Use A Sauerman DragScraper

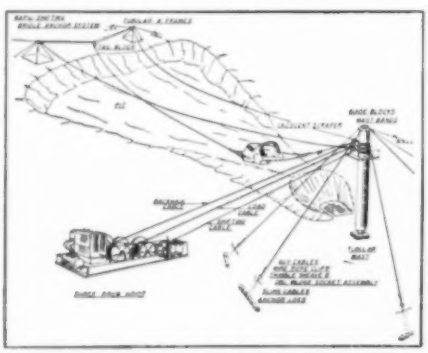
● **SOFT GROUND**—Sauerman DragScrapers work on surfaces where wheeled equipment cannot go and where mats are required to operate a dragline. The DragScraper digs and hauls its load quickly at ground level to hopper or pile. It carries a payload of two to three times its weight. You are not paying the power costs of a heavy machine with a handling capacity that is just a small portion of its weight.

● **NARROW SPACE**—A DragScraper can be operated through an opening no larger than the bucket's width. They are used successfully in culverts, sewers, tunnels, under bridges and buildings. Locations with limited space and head room . . . unworkable with other equipment . . . are handled efficiently and economically with a DragScraper.

● **DEEP WATER**—A Sauerman DragScraper will dig as much as 100 ft. below water... this is far below the safe depth that a dragline bucket can go without the danger of undermining and overturning the machine. Use a DragScraper for trenching, digging channels, lakes or for beach construction.

● **STEEP HILLS**—These are routine for a DragScraper. Material can be taken from anywhere on the bank. Digging from the top of the slope eliminates cave-ins—and the DragScraper gives an extra bonus by pushing additional material in front of the bucket on its way down the slope.

The Sauerman DragScraper operator and hoist is always located away from any hazardous area. It is designed for years of safe, continuous duty, handling bucket sizes up to 15-cu. yds. over spans to 1000 ft. or more.



THE SAUERMAN METHOD—*showing a basic DragScraper installation. Variations of this method are Sauerman engineered to handle the toughest digging jobs at the lowest cost per cu. yd.*

When you have a "tough-to-handle" job consult Sauerman engineers about Sauerman equipment and the Sauerman Method. Request Catalog A, also the Sauerman News and field reports.

SAUERMAN BROS., INC. 622 SO. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

Equipment . . .

Continued from page 42

closely matched to engine and transmission characteristics. It is a single-stage, two-phase converter with a torque multiplication factor of 2.72 to 1 at stall.

The "Paylomatic" power-shift transmission, designed and built by Hough, provides three speeds in each direction. Finger-tip shifting up or down in either direction, without "clutching" or stopping for a range shift, gives fast operating cycles.

Power-transfer differentials, which automatically shift additional torque to the wheels with the best traction, continue as standard equipment on both front and rear axle assemblies.

Improved Tournapull

Manufacturer: LeTourneau-Westinghouse Co., Department EE, Peoria, Ill.

Claims: Horsepower has been increased to 335 and capacity has been boosted to 21 yards struck and 28 yards heaped on the model B Tournapull.

The new standard engine is a Cummins six-cylinder, four-cycle diesel with a high volume, high efficiency turbocharger. The combination of this turbocharger and a newly designed ground gear, precision flow fuel pump provide the engine with superior acceleration characteristics.

The power increase is reflected in higher speeds. The model B with standard step gear transmission is now capable of low range speeds up to 20.7 mph while in high range, top speed has been increased to 30.1 mph.

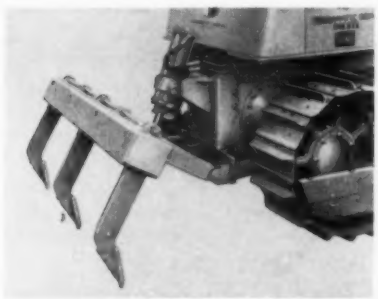
An increase in horsepower is also announced for the optional GM Detroit Diesel six-cylinder, two-cycle engine which is available in the model B. This engine, a 325-hp unit, "breathes easier" than the two-cycle engine which was previously available for the "B". To provide this improved breathing the size of intake ports in cylinder linings have been substantially enlarged and the number of exhaust valves increased from two to four per cylinder.

Boosting the struck capacity of the B Fullpak scraper by nearly 2 cubic yards (from 19.1 to 21) was accomplished by

making only minor modifications. The modifications in no way disturb the easy loading characteristics of the design.

As with the other size Tournapull lines, the "B" Fullpak scraper is readily interchangeable with other trailing units designed for use behind the prime mover. Currently available in the "B" size are a 35-ton rear dump and a 30-ton crane in addition to the scraper.

Heavy-Duty Ripper



Manufacturer: J. I. Case Co., Department EE, Racine, Wis.

Claims: A new Case heavy-duty ripper is built to match the pulling power of torque converter-equipped TerraTrac model 800 and 1000 crawler tractors under extremely tough conditions.

Designed to provide maximum strength and penetration in hard-packed soils, the new ripper digs to a depth of 20 inches. Removable hardened steel teeth are 1½ inches thick and have replaceable drive-on tips. Three teeth are standard, but extra slots are provided so that five can be used for lighter digging. A single tooth can also be used for subsoiling and ripping old pavement.

The ripper is raised and lowered by a large trunion-mounted hydraulic cylinder controlled from the operator's seat. Weight of the ripper on dozer-equipped tractors is 985 pounds. On tractor-shovel models, 1,740 pounds of ballast weights are added. The tractor models for which the new ripper is designed are capable of developing up to 20,000 and 24,000 pounds drawbar pull respectively.

1½-Yd. Shovel

Manufacturer: Manitowoc Engineering Corp., Department EE, Manitowoc, Wis.

Claims: Manitowoc has announced a new 1½-yd. shovel. The model 2300 is easily converted to 1½-yd. clamshell or trench hoe, 1½ to 2½-yd. dragline or 35-ton crane.

A feature of the model 2300 is easy

Continued on page 46

Owner Gets 20% PAYLOAD BONUS From His MARION!

MFR, 8 to 10 cubic yard body, one-inch oak liner with 3/16" wear plate and three-quarter size cab protector; HD-10S hoist.

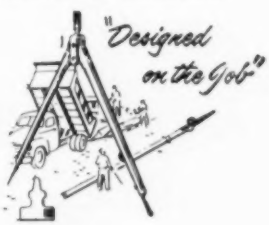
FAST OPERATION OF MARION'S HD-10S HOIST HELPS MAKE POSSIBLE EXTRA PAYLOAD TRIPS DAILY

A contract hauler working on the 300-mile Connecticut Thru-Way is realizing extra payload trips daily with his Marion hoist and body. Playing an important part in these daily bonus payloads is Marion's fast operating hoist.

The Marion unit has been on the job every working day for 6 months, hauling blue diamond sand and stone over a rough 10 miles of road. So far, it has outperformed all other units of the same size but of different make in his truck fleet.

In fact, the performance of the Marion has been so outstanding that the contract hauler has placed an order for two more Marion units with HD-10S hoists and MFR 7 to 10 cubic yard extra heavy duty contractor's bodies.

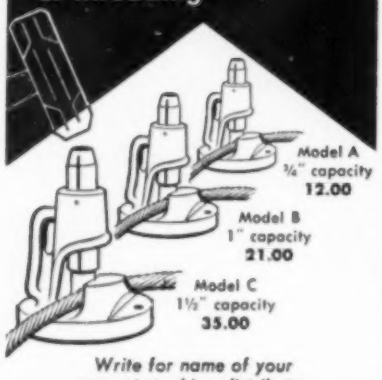
Next time you're shopping for a hoist and dump body that must do a tough job fast and well, check your Marion distributor.



MARION BODIES AND HOISTS

MARION METAL PRODUCTS CO.
MARION, OHIO, U.S.A.

WITH A HAMMERBLOW... 3 SHARP RAPS CUT WIRE ROPE CLEAN... *leave it round, ready for splicing or threading*



Write for name of your nearest stocking distributor

HAMMERBLOW
WIRE ROPE CUTTER CO.
9 Proffit Ave., Springfield, N. J., DRexel 6-4767

Equipment . . .

Continued from page 45

hydraulic jack adjustment of the crawler drive. This feature is patterned after "big machine" design to assure even crawler tension at all times.

The king pin of the 2300 is forged and heat treated, designed to take the strains of the toughest digging.

Also featured is a new flat-designed 62-in. roller path, which allows more precise adjustment between the house rollers and the king pin to minimize strain on the pin.

The new model has only 11 gears in the upper deck machinery. Manitowoc

"FASTER FROM FOSTER"
STEEL SHEET PILING
H-Bearing Pile - Pipe Pile - Rail Pile
From our regular stocks
L. B. FOSTER CO.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

"Power-flo" design and slide-pinion arrangement greatly add to the simplicity of the machinery, speeding the working cycle, adding power to the operation and minimizing the amount of maintenance and service time necessary. Also greatly cutting the necessary service time is a central lubricating point from which all major grease points may be reached at once.

Massive carbody and long wide crawlers provide greater traction and stability even in the most rugged rock digging. Torque converter, air controls and self-removing counterweight are among optional features that give smooth and steady operation.

Portable Mining Cable Skids

Manufacturer: General Electric Co., Department EE, Schenectady 5, N. Y.

Claims: New portable mining cable skids that serve as portable switching stations for distribution of a-c power has been announced by General Electric.

Designed for easy handling for both surface and underground mining applications, the cable skids provide an economical and convenient method for distributing power throughout open pit and complete underground mines.

Equipment features of the cable skids emphasize safety, especially for underground applications where grounding presents a problem. This safety feature is provided through use of a ground continuity check system that minimizes the hazard of improper or incomplete ground.

The ground continuity check system uses an auxiliary disconnect in the primary coupler to provide a monitoring circuit which is completed when the coupler plug is inserted in the socket and interrupted when the plug is removed.

The cable skid equipment utilizes General Electric oil-filled power circuit breakers with either manual or electrical operation. Cable skids are available for use on systems rated 4.16 kv to 7.2 kv, with short circuit capacities from 25 to 150 MVA. The equipment's insulation level rating is 75 kv B.I.L.

Weight of the new equipment ranges from 1,600 to 3,450 pounds, and four designs are available—two for surface applications and two for underground applications. Surface equipment dimensions are 46 x 42 x 78 inches and 46 x 48 x 98 inches. Underground equipment dimensions are 42 x 42 x 78 inches and 42 x 48 x 98 inches.

Pneumatic Drills

Manufacturer: Chicago Pneumatic Tool Co., Department EE, 6 E. 44th St., New York 17, N. Y.

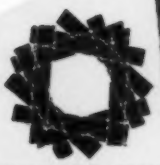
Claims: Chicago Pneumatic has introduced three new percussive drills for medium and deep-hole operations. In hard trap rock, the 4½-in. heavy-duty CP-450DR model, mounted on a Chicago Pneumatic G-800 Tracdril, drills 10 feet of 3-in. hole every seven minutes. Using 10-ft. sectional rods on 40-ft. holes, total elapsed drilling time is only 34 minutes. It handles 3-in. holes to 75 feet or larger holes to lesser depths.

Both the heavier-duty CP-450DR and the 4-in. CP-400DR models have standard neutral-reverse rotation, and the machined alloy-steel striking bar in

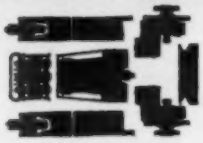
Continued on page 49

CONTRACTORS CUT COSTS WITH EIMCOS'

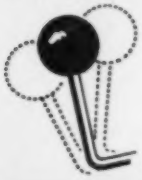
Move more earth at less cost with Eimco heavy-duty equipment



INDEPENDENT TRACK ASSEMBLY
Each track is powered and controlled separately — Tractor spin turns in it's own length, with one track in forward and the other in reverse.



UNIT ASSEMBLY
Each major tractor component is a separate assembly for easy maintenance or removal without disturbing other components.



INSTANT REVERSAL
No stopping, manual clutching or gear shifting to change directions — A pull on the track control levers immediately reverses the tractor.

FULL VISIBILITY
Up-front operators position eliminates all guess work in dozing, digging, pushing and loading operations.

Eimco heavy-duty earth moving machinery will permit lower bids on construction work.

Here are reports from a few jobs where Eimco equipment is being used:

1. Underground limestone quarry working an Eimco 105 on 2 levels to do all underground loading. — "Our maintenance parts and labor for the past 21 months have cost 2½ cents per ton."

2. Road contractors in the deep South — "We now have more than 17,000 hours on our 105 and have not had to open the transmission for any reason."

3. "We averaged better than 45 feet a day on our job mostly because of the 105's." — This letter from a tunnel contractor who is driving a large heading with two 105's working side by side.

4. Quarry contractor — "In a few days we should receive our third Eimco 105. These machines are gradually taking over all production and are replacing the boom shovel."

5. Railroad contractor — "Our 105 has replaced a 1½ yard boom shovel and a bulldozer we had used to move stone up to the shovel.

THE EIMCO CORPORATION • SALT LAKE CITY, UTAH
EXPORT OFFICE, 51-52 SOUTH STREET, NEW YORK, N. Y.
BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

B - 346

These Sewer and Water Jobs Profited from Bucyrus-Eries. Yours Can, Too!

PERFECT ANSWER FOR CONTRACTORS who want a 1-yd. hoe, says the owner of this Bucyrus-Erie 30-B. The machine is trenching for storm sewers in Monterey Park, Calif. Some 85,000 yards of sand and clay along with sections of 5-in. asphalt pavement must be removed. Introduced early in 1957, the Bucyrus-Erie 30-B is fast becoming the most popular 1-yd. excavator.

BUCYRUS-ERIE hoes are making money on sewer and water jobs everywhere. These top output machines can do the same for you. Look over the jobs pictured. Compare them with your own spreads. Then see your nearby Bucyrus-Erie distributor for complete details on any hoe from ⅜ to 2½-yd. capacity. Bucyrus-Erie Company, South Milwaukee, Wis.

474E58C

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

16 FEET DOWN THROUGH ROCK AND GUMBO. This 15-B demonstrates its ability to reach well below the surface to dig a trench 16 feet deep and 2½ miles long for 10-in. sewers in Murfreesboro, Tenn. The line is being installed to serve a new industrial plant. Here, as on trenching jobs across the country, ease of operation helps the contractor make money.

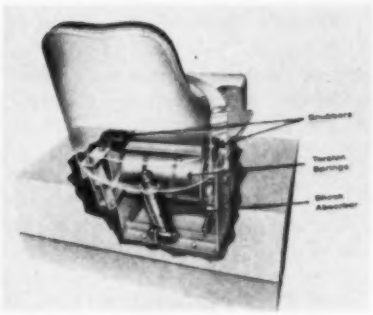
Equipment . . .

Continued from page 46

the locked-in-shank chuck assembly is threaded for sectional steel. The powerful air-blow efficiently cleans drill cuttings at rated depths. The CP-400DR drills 2½-in. holes to 50 feet or larger holes to lesser depths.

For medium operations the new 4-in. standard-rotation CP-400 drills 3-in. holes to 25 feet.

Tractor-Scraper Seat



Manufacturer: Caterpillar Tractor Co., Department EE, Peoria, Ill.

Claims: A step toward improving operator comfort has been introduced in the form of a new system of seat suspension for Caterpillar wheel tractor-scraper units. The Torsionflex seat, which is designed to effectively iron out the bumps of the haul road, has been recently made available on the complete Caterpillar line of rubber-tired tractors.

The Torsionflex seat introduces a new concept in seat suspension that allows the operator to approach "highway" comfort in the severe working conditions of off-highway operation.

To accomplish this smoother ride, the new seat was designed to include three large-capacity, resilient rubber torsion springs. These rubber "cushions" are aligned horizontally, and are fixed at one end. The base of the seat is mounted on the other end, and the shock of ground impacts is absorbed by the resilient twisting of the rubber. To dampen oscillation, or the tendency of uncontrolled springs to "over-rebound," a double-acting hydraulic shock absorber has also been incorporated. The combination of these two shock-dampening features tends to provide controlled smoothness of ride.

In testing the Torsionflex seat's effectiveness, it was checked against the performance of a standard seat, operating in machines traveling over rough haul roads. Two machines, one with the Torsionflex seat and the other with the former model seat, were subjected to test. Instruments which automatically plotted oscillograms were attached to the operator of each machine. The resulting graphs showed a comparison between the levelness of ride of each seat over the same test road. Shown below are the test results, which indicate that the Torsionflex seat provided a smoother ride, both in intensity of individual bumps and controlled oscillation.

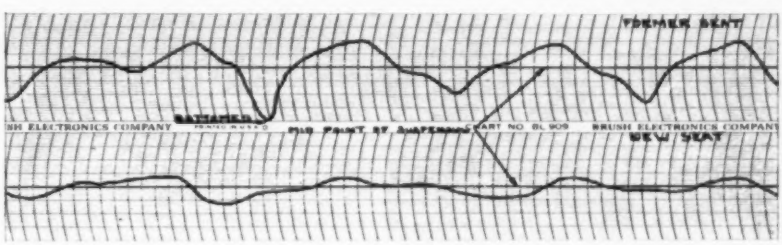
In addition to cushioning the ride, the seat is also equipped with rubber snubbers to absorb shock if the seat should approach the maximum limit of its oscillation as a result of extreme haul road bumps.

Seat belts are standard equipment on the DW20 and DW21 Torsionflex seats. Intended to provide safety to the operator in the event of emergency stops, the seat belt is made of 3-in. wide nylon and is adjustable. To further increase operator safety, the belt fastener is equipped with a quick-release over-center device, allowing the operator to instantly disconnect the belt at its mid-point by a touch of the hand. The over-center latch further means that no "threading" is required, as with buckle-type belts. The operator is securely fastened in or instantly free at his discretion.

Taking into consideration the varying weights of different operators, an adjustment handle has been installed on the seat. By making tension adjustments with this control, operators from 130 pounds to 260 pounds are afforded a ride of equal smoothness.

So that the seat may be tipped forward only at the discretion of the operator, a securing latch is provided. It

Continued on page 52



TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893

THE WHITMORE MANUFACTURING CO.

LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

NOT in the Contract

Two cannibals met in a mental institution. One was tearing out pictures of men, women and children from a magazine, stuffing them into his mouth and eating them.

"Tell me," said the other, "is that dehydrated stuff any good?"

Looking over the rim of the volcano's crater, one American tourist said to another:

"Really something huge, isn't it? Reminds one of hell, doesn't it?"

One of the natives who overheard the remark, shrugged his shoulders, threw up his hands and exclaimed:

"These Americans. They've been everywhere."

"I'm not wealthy and I don't have a yacht and a convertible like Joe Brown," apologized the suitor, "but, darling, I love you."

"And I love you, too," replied the girl, "but tell me more about Joe."

The teacher had asked her pupils who the nine greatest Americans were. All of the students had turned in their papers except Johnny.

"Can't you finish your list, Johnny?"

"I'm still undecided," replied Johnny, "about the first baseman."

President to personnel manager:

"We must get some promising young men into the organization. It's the only way we can attract secretaries!"

The social worker, visiting the inmates of the local jail, asked a variety of questions as she went from cell to cell. Finally, of one prisoner who was enjoying a long stay in the workhouse, she asked: "Was it your love of liquor that brought you here?"

"Hell, no lady," he replied. "You can't get nothin' in here."

Uncle: "You boys of today want too much money. Do you know what I was getting when I married your aunt?"

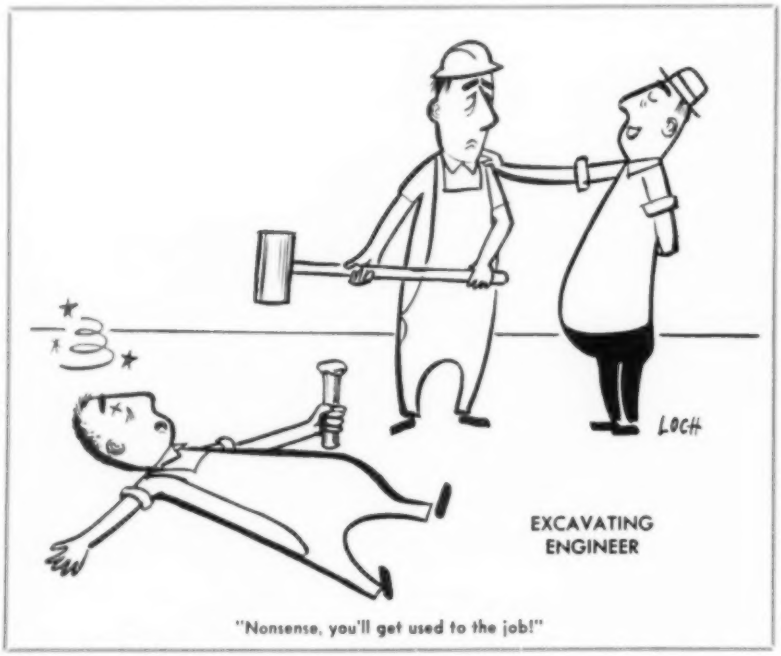
Nephew: "No, and I'll bet you didn't either."

A woman called up her insurance agent and said she wanted to change her beneficiary.

Woman: "I've just had twins."

The insurance man had difficulty hearing her and asked: "Will you repeat that again, please?"

To which she shot back emphatically: "Not if I can help it!"



"Nonsense, you'll get used to the job!"

"It's true," said the husband. "My wife ran away with my best friend."

"Too bad. Was he a handsome devil?"

"Can't say. I never met the man."

A fellow recently bought a foreign automobile and after careful computation over a month came to the conclusion that he was not getting the phenomenally high mileage so often credited to such cars. So he took it to a local mechanic who, after checking it thoroughly, pronounced it in perfect condition.

"But isn't there something I can do to increase this mileage?" he asked.

"You can do the same as most foreign car owners do," replied the mechanic. "Lie about it!"

Girl: "You play beautifully. Why did you take up the piano?"

Pianist: "My beer kept falling off my violin."

A pretty young thing got tired of standing up on the bus every morning on the way to work. So one morning she tried an experiment. She got on the bus carrying a copy of a book titled, *Having Your First Baby*. It worked like a charm. She kept repeating the experiment, and almost every morning for eight months she was offered a seat on the crowded bus.

One night the young lady's steady boy friend finally brought himself to the point of proposing marriage. She accepted. The next morning she got on the bus flashing a new engagement ring.

The bus driver gave an approving nod, then pointed to a series of pencil marks on the dashboard in front of him.

"I've been keeping track, sister," he said. "You're getting in just under the wire, you know."

"Uncle, what's a bachelor?"

"Junior, a bachelor is a man who always went out on double dates in college."

A backwoods woman, the soles of whose feet had been toughened by a lifetime of shoelessness, was standing in front of her cabin fireplace one day when her husband addressed her:

"You better move yer foot a mite, gal. You're standing on a live coal."

She said nonchalantly: "Which foot, Paw?"

"I want you to know, my dear, you're the first girl I've ever made love to," he said as he shifted gears with his feet.

CAT FUEL INJECTION EQUIPMENT CUTS COSTS BY PROVIDING MAXIMUM ENGINE PERFORMANCE

Presetting at factory for accurate performance eliminates field settings, makes installation of Caterpillar fuel injection pumps quick and simple.

The fuel injection system is a key to peak engine performance. It must deliver to each cylinder equal amounts of fuel at precisely the right time. Deviation means a loss in horsepower. That's why it pays to use Cat fuel injection equipment.

Cat injection equipment can save you money in other ways, too. No field or operating adjustments are necessary. Installation is *quick and simple*. All pumps are interchangeable for different cylinders and between engines of the same model.

This interchangeability permits smaller parts inventories, makes replacement inexpensive by eliminating custom fitting, and makes replacement possible in a matter of *minutes* right on the job regardless of the experience of the mechanic.

Genuine Caterpillar injection equipment is built to last. With clean fuel, a life of 20,000 service meter hours is not unusual.

Pumps, plungers and barrels are manufactured from the finest chromium alloy, so hard that diamond dust is required for lapping the plungers and barrels. Pumps are tested and preset at the factory to provide accurate metering, timing and fuel pressure.

HIGHEST STANDARDS in the industry go into the manufacture of Caterpillar fuel injection equipment. Pump plungers and barrels, for example, are finished to tolerances so fine that the heat from your hand will expand a plunger enough to make it larger than the matching barrel.

SERVICE TIP

Your Caterpillar Dealer has the testing equipment to determine accurately when fuel injection systems parts should be replaced. And testing is the only sure way of knowing.

RUN-IN TESTS—four hours on pumps, two on valves – are conducted on these Caterpillar-built test machines before a pump or valve leaves the factory. Strict testing procedure means perfect performance of genuine Caterpillar injection parts.

Single-orifice fuel injection valves minimize the possibility of clogging or fouling. A spring-loaded plunger within the valve opens by fuel pressure at the proper time for uniform and precise injection. Extra protection is given by a fine-mesh screen. This clean, accurate injection means less down time and lowest fuel cost per unit of power.

Don't risk real damage to your Caterpillar equipment with an improperly functioning fuel injection system. Test systems regularly and replace worn parts with genuine Caterpillar parts. Your Caterpillar Dealer has the full story. See him today. And remember, he stands behind every part he sells.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Improper fuel injection equipment can be expensive. For instance, if a machine's owning and operating cost is $10 per hour, its total cost in a 2,000-hour season is $20,000. For a 200-horsepower machine that's $100 per horsepower. A poorly functioning fuel injection system which robs the machine of 5% of its horsepower (10 HP) could mean a season loss of $1,000 (10 [HP] x $100). Don't take chances. Standardize on Cat equipment.

CATERPILLAR

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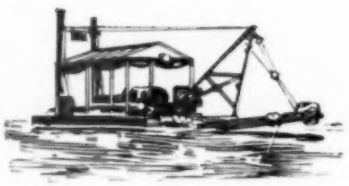
ELLICOTT DRAGONS*

insure low-cost operation, in moving waterbound solids.

Ellicott "DRAGON" 10—Easily assembled, pumps mud, silt, sand and gravel through pipelines up to 2500 feet long; capacity 90-325 cubic yards per hour.



Ellicott "DRAGON" 8—Capacity 60-150 cu. yds. per hr. through pipeline up to 2000 ft. long. "Dragons" available with enclosed or tropical deck house, as shown.

Ellicott "Dragon" model dredges recognized the world over for efficiency, economy, versatility and portability . . . offer engineers, builders, contractors, the cheapest method of moving waterbound solids. And do it with the efficiency and economy possible only with a hydraulic dredge. Ellicott can supply you with a full line of spare parts and auxiliary equipment, plus expert engineering service. Write for free Bulletin No. 925.

*T. M. REG. U. S. PAT. OFF. MARQUE DÉPOSÉE

ELLICOTT MACHINE CORPORATION

1619 Bush Street, Baltimore 30, Maryland, U. S. A.

Subsidiaries: Dragues Ellicott France, Paris, France; Ellicott de Mexico, Mexico City, Mex.; Ellicott Fabricators, Inc., Baltimore, Md.; McConway & Torley Corp., Pittsburgh, Pa.; Baltimore Foundry & Machine Corp., Baltimore, Md.

Successors to the floating dredge business of the Bucyrus-Erie Co. and the American Steel Dredge Co. Complete engineering sales and repair parts service. 1144

Equipment . . .

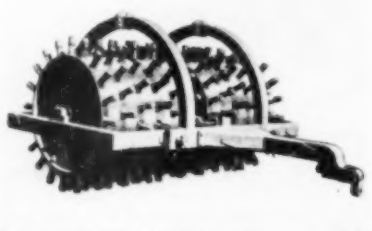
Continued from page 49

supplies a positive lock between the seat and the tractor until the operator purposely unlatches it. When the seat is tipped forward for protection from the weather, the latch becomes a support to maintain it in that position.

Sheepsfoot Roller

Manufacturer: Southwest Welding & Mfg. Co., Department EE, 5201 W. Mission Rd., Alhambra, Calif.

Claims: The new Southwest model 55 arch-type heavy-duty sheepsfoot roller is designed and manufactured specifically for use in tandem behind Caterpillar D9 tractors or equivalent machines. Latest production line model of Southwest's full line of tamping rollers, the model 55 has a reinforced arch-type frame to allow accurate control in tandem applications.



The heavy-duty, full-oscillating, double-drum tampers meet U. S. Corps of Engineers, Bureau of Reclamation and state highway compaction requirements. The model 55-RR has removable type shoes and the model 55-WS has wedge type solid feet.

Models of this production version were introduced in tandem on the giant, multi-million dollar Casitas Dam project near Ventura, Calif., by Winston Brothers Construction Co. of Montebello.

Put into action behind a Cat D9 tractor on the dam fill, the tandem Southwest roller arrangement produced compaction in almost half the time of conventional single units—a substantial advantage for the contractor.

In addition to the 55-RR and 55-WS models, Southwest also offers other heavy-duty, medium-duty and light-duty conventional sheepsfoot rollers to meet compaction requirements. Medium-duty sheepsfoot rollers are designed for use in average earth fill work and meet state highway specifications. The light-duty rollers are generally used on short jobs where the time element and required density are of secondary importance.

Hose and Cable Bridge

Manufacturer: Calumet Steel Castings Corp., Department EE, 1636 Summer St., Hammond, Ind.

Claims: A practical item for contractors is a new flexible, interlocking hose and cable bridge for use in guarding against damage from heavy-wheel traffic.

Produced as a steel casting, the device weighs about 32 pounds per unit. Each unit has integrally cast interlocking joints at each end to facilitate assembly of any number of units as needed without use of tools.

The hose and cable bridge is suitable

for construction jobs and strip mines or other areas where electric cables, water or air hoses must be traversed by trucks, cranes or other vehicles.

Higher Capacity Rock Hauler

Manufacturer: Koehring Co., Department EE, 3026 W. Concordia Ave., Milwaukee 16, Wis.

Claims: Incorporation of a no-turn shuttle hauling feature in a bigger capacity Dumptor unit has been announced by Koehring. Construction and capacity-wise, the new model 100 is intended for rugged road building jobs as well as tunnel and open pit mining. A 10-yd. or a 30,000-lb. payload can be handled.

Speeds up to 20 mph in either direction are possible because of a constant mesh transmission and torque converter drive. The Dumptor has two speed ranges controlled by hydraulic clutches. Loaded and in low range the maximum speed is 6¾ mph. A pivoting seat permits the operator to drive in either direction without lost time involved in turning around. Dual steering wheels, throttles and brake pedals are provided.

Both an instantaneous gravity and a controlled dump are possible with the model 100. A free swinging kick-out pan and a 65° dump angle are used to assure complete discharge when wet material is being hauled. Bolted down, the ⅜-in. thick steel pan adds to body strength.

Nearly 100 square feet of target area for the shovel or loading crane operator are contained within the flared sides of the dump body. An 8-ft. 3-in. distance from ground level to the top of the dump body is well within the dumping height of front end loaders.

By oscillating up to 18 inches, the steering axle helps to keep twisting strains out of the main frame. Travel over rough terrain and fast spotting are aided by power steering. The Dumptor can climb 28½% grades when fully loaded.

You can't set your sights too high

For digging . . . for handling material . . . for any clamshell work — OWEN Buckets perform giant size jobs day in and day out. OWEN'S designing and engineering experience, gained through 50 years of manufacturing Clamshell Buckets exclusively, has developed a product that is guaranteed to out-perform any other make. Remember—the bucket is the working end of the boom and it is of the utmost importance that there is absolute assurance the bucket will do the job.

This experienced "know-how" in design and engineering has contributed to the origination of the only independent tine action Grapple to handle rock, scrap metal or pulpwood. The same unequaled quality construction in OWEN Clamshell Buckets is in OWEN Grapples.

OWEN Engineers are at your service any time at no cost to you. Send us your needs, stating exactly what are your requirements. We should have the answer that will "fit the bill to a T".

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

Bechtel . . .

Continued from page 21

bile. The damsite is now accessible by a bitumininous paved highway built by the United States Forest Service, which joins seven miles of graded earth road leading down the mountainside to the dam. Access between Edison's existing Big Creek Powerhouse No. 8 and the Mammoth Pool Powerhouse made necessary the construction of a mile of roadway and a bridge across the river at Mammoth Pool Powerhouse. In addition, construction of about 15 miles of new roadway and tie roads to the Forest Service highway was required to provide direct access from the Mammoth Pool Powerhouse to the damsite, to tunnel portals and adit, surge chamber and creek diversion sites.

Access road construction to the powerhouse was pushed by the joint venture firms of Harms Brothers, Sacramento, and Thomas Construction Co., Fresno. The firms also were awarded the river bridge contract near the powerhouse, electing in alternate bids to construct a new steel girder, T-beam approach span structure rather than to move an old 305-ft. bridge with a 145-ft. main span from Edison's Powerhouse No. 2 in the same general area.

Roadbuilding Equipment

Construction of the access roads was chiefly an excavating show. The contractors used four Cat D8 dozers, an International TD-24 supercharged machine, a D6 with backhoe attachment and a Cat No. 12 motor grader. Shovel work was handled by a Link-Belt Speeder and a Northwest 80-D. There were six Gardner-Denver and Ingersoll-Rand compressors up to 600-cfm in size, two Air Trac mounted Gardner-Denver drills and a few jackhammers and wagon drills on this work.

Because the damsite is so remote from

Whirlybird Magic!

The airborne helicopter, new tool for construction stiffs, has just saved a 10-man crew two months of back-breaking work at Mammoth Pool Dam. By flying in the materials for about 20 tons of night-lighting towers in only 12 hours flying time, the whirlybird crew cut by more than half the anticipated cost of erecting six towers in inaccessible places—three on each abutment.

A Bell G2, owned by Aircopter Transport, Inc., Santa Ana, Calif., was rented for about $100 an hour. Fred Riess and Ed Cronan, co-managers and former Marine Corps helicopter pilots, personally flew in the cargo. When a carpenter superintendent suggested that a portable generator for power carpenter tools would be nice at the tower sites, the helicopter flew it in. Averaging from 350 to 500 pounds of timber, platform lumber, electrical heads and other supplies a trip, the machine flew in 27 loads in less than an 8-hour shift.

A staging area was established near the access road, where trucks could unload tower materials. The whirlybird took it from there. Only two men were needed to load the prefabbed sections on the sides of the machine, and lash them down. Despite tricky air currents and downdrafts, particularly in the late afternoon, the job was completed so quickly that access-road conscious construction stiffs were amazed.

Ground crewman and pilot lash materials for a lighting tower to sides of Bell helicopter prior to flight to tower positions on top steep walls above excavation site.

Fully loaded, helicopter roars across deep gorge to opposite abutment. This is easier and faster than bulldozing a pioneer road.

nearby towns, the contractors have established construction camps near the sites of their work. The camps are not fancy, by any means, but they are adequate to feed and house the men who have to use them. Excellent first aid and temporary hospital service is provided for, and there is an ambulance on 24-hour duty to rush seriously injured cases to Fresno, some 90 miles distant.

Shop facilities also are good. They consist of steel frame, aluminum-siding buildings with adequate heavy equipment repair bays big enough to take the bigger tractors and hauling units. The preventive maintenance program is in line with current practice and follows manufacturer's instructions without much deviation. Major repairs to equipment are made at the site, and routine lubrication and minor operating repairs are taken care of in the field. Since the job is so remote, special emphasis is being placed on preventive maintenance.

When the project is finished in early 1960, the camps will be completely disbanded, and even operating personnel will be rare. Edison plans to operate the dam and powerhouse by remote control, possibly through the use of closed-circuit television which will carry information to the Big Creek No. 3 control center. This will make Mammoth Pool an efficient, low-cost generating installation. Edison's Portal powerhouse also is operated by remote control.

Field personnel in charge of construction include George W. Saul, project superintendent for Bechtel; Ted Grover, project engineer; and Whitey Lee, diversion tunnel superintendent. Neville Long is Edison's resident engineer, with H. A. Barber as project engineer.

Mammoth Pool Dam Statistics

Size of reservoir	123,000 acre feet
Dam type	Rolled earth and rock fill
Height above stream bed	330 feet
Depth below stream bed	150 feet
Crest elevation	3,360 feet above sea level
Crest length	800 feet
Crest width for roadway	30 feet
Upstream embankment slopes	3.0 and 4.0 on 1
Downstream embankment slopes	2 on 1
Cutoff trench slopes	1.5 on 1
Thickness of upstream rip-rap	3 feet
Thickness of downstream slope rock	1 on 2 feet
Main embankment earthfill	3,983,000 cu. yds.
Cutoff trench earthfill	190,800 cu. yds.
Slope protection rock	108,000 cu. yds.
Selected materials, transition	149,000 cu. yds.
Rock in embankment	241,300 cu. yds.
Spillway discharge capacity	150,000 cfs
Spillway crest elevation	3,330 feet above sea level
Maximum flow velocity	50 fps
Spillway excavation	390,000 cu. yds.
Spillway concrete required	2,000 cu. yds.
Spillway type	Ungated chute, modified ogee crest

Power Features Statistics

Power tunnel:

Type	20-ft. average dia. Edison horseshoe
Tunnel length overall	39,554 feet
Length of 20-ft. diameter, unlined horseshoe section with 6-in. concrete invert	37,377 feet
Length of supported, gunited section	3,000 feet
Length of 17-ft. ID reinforced gunite lined 20-ft. section	350 feet
Length of transition sections (20-ft. rough to 17-ft. circular gunite to 13-ft. steel)	124 feet
Length of 13-ft. ID steel pipe lining with plain concrete backfill	1,519 feet
Tunnel flow, lowest reservoir level	1,750 cfs
Tunnel flow, highest reservoir level	2,000 cfs
Tunnel slope	0.002 ft. per lin. ft.

Surge chamber and rock trap:

Type	Hour-glass
Upper zone diameter	75-ft. (tentative)
Lower zone	90-ft. (tentative)
Rock trap	6 feet deep, 30 feet long

Penstocks and powerhouse:

Penstock type	Welded steel, concrete footings
Penstock valves	Two 105-in. dia. butterfly type
Powerhouse type	Reinforced concrete, outdoor type
Gantry crane	240-ton twin hoist gantry type
Turbines	Two units, reaction, Francis type, 88,000 hp each guaranteed at 940-ft. head
Generators	Two units; 63,000-kw each; 200 rpm; 13.8 kv; 60 cycles; Y-connected.

Battery . . .

Continued from page 25

tor output and voltage regulator in proper adjustment.

Never let a battery remain in a discharged condition for an extended time. The discharge action of a battery sulphates the plates, but this can be driven off if the battery is charged soon after discharge. However, if the battery is allowed to remain too long in a discharged condition, the sulphate becomes hard and is very difficult, if not impossible, to drive from the plates during charging.

Batteries have much longer service life if they are kept at or very near full charge at all times. In normal operation of equipment, some discharging and charging of the battery takes place continuously, but the battery is not discharged to a great extent at any time. However, cycling a battery (regularly discharging it almost completely and then recharging it) will seriously affect its service life.

Never use the electric starter more than 30 seconds at a time and then allow approximately two minutes be-

Continued on page 58

EX-LAFFS

by Marvin Townsend

HITS the ROAD.

FREE BEER IN GARAGE
CONCRETE MIXER
WISE GUY, HUH?
EXCUSE ME A SECOND. I'LL BE BACK OUT BEFORE YOU KNOW IT!
POWDER ROOM
HANG SHOVELS HERE
PETE
NOT MANY IDLE SHOVELS AROUND SINCE I PRINTED THEIR NAMES ON THEM.
JOE
GUS
I ALWAYS WEAR COTTON IN MY EARS. NEVER CAN TELL WHEN I MIGHT FALL WITH SOME OF THIS STUFF.
DID YOU CHECK THAT NEW MAN'S REFERENCES?
NITRO
BUTCH
EXCAVATING ENGINEER

KEEP MAINTENANCE COSTS IN LINE

Prescription Filtration

WIX Filter Cartridges are engineered specifically for every engine in construction service ... gasoline or Diesel—mobile or stationary—for lube, fuel, and air.

CATERPILLAR • DETROIT DIESEL
INTERNATIONAL
LE TOURNEAU • MURPHY
ALLIS CHALMERS
and ALL OTHER
Construction Equipment

USE wix®

FILTER CARTRIDGES on ALL Your Engines!

Let WIX *team-up* with your maintenance section to give you Prescription Filtration that stops costly engine failures and reduces construction equipment down time. WIX Lube, Fuel, and Air Filter Cartridges keep damaging dirt, grit, and sludge out of vital engine areas. Install WIX HEVI-DUTY Cartridges in *all* your filters for this money-saving trouble-free ℞ filtration. They're made especially to stand up under tough operating conditions and work schedules.

WIX *teamwork* includes a FREE Filter Survey that lists every one of your engines with its correct lube, fuel, or air filter Cartridge replacement. And, your local WIX Wholesaler will stock a reserve supply of the particular Cartridges you need—one convenient source for fast filter service.

wix® FILTERS

Ask your Jobber, or write us—TODAY!

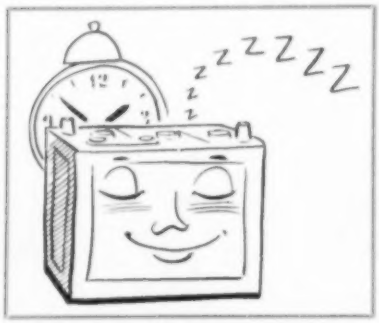
FREE • • • •

WIX CORPORATION • GASTONIA, N. C.
In Canada: Wix Corporation Ltd., Toronto

Battery . . .

Continued from page 55

tween cranking cycles. The brief rest period allows the battery plates to cool and allows the battery to recuperate sufficiently to again deliver a surge of power.



Allow a two-minute rest period between cranking cycles, and never use the starter more than 30 seconds at a time.

After emergency use or accidental energy loss, such as leaving the lights on overnight, it might be necessary to quick charge the battery. No particular fault can be found with quick charging or hot charging methods, providing the manufacturer's instructions are closely followed.

In cold weather, never add water at the end of a day's run. Instead, add water in the morning just before starting or right after starting. In this manner, the water will be thoroughly mixed with the acid by the end of the day's run and freezing of the electrolyte will be prevented.

Storage batteries which are not in use will lose their strength gradually (the rate of discharge depends upon the temperature) when left on the shelf or stored in machines for an extended time. The higher the temperatures, the greater the loss of energy. To keep them full strength and ready for use, recharge batteries in storage when their specific gravity drops to 1.240. A fully charged battery will show a hydrometer reading of 1.270 to 1.280.

Jackson . . .

Continued from page 29

excavated by a fleet of scrapers, including Euclid 22-TDT's and S-18's, Caterpillar DW21's and a Garwood. Some shovel loading was done by the Lorain 820. McDowell & McDowell's pusher equipment included two Cat D7's, three D8's and a D9, plus a Euclid TC-12 pusher. Road patrolling was done by a Cat No. 12 grader.

H. G. Thompson was McDowell & McDowell's superintendent at Jackson. His staff included Marvin Terrell, engineer, and Foremen R. T. Hartley, Ralph Utley and Ben Abston. O. W. Tidwell is project engineer for the Corps of Engineers, Mobile district.

Construction of the lock and dam was begun last May. The overall length of the structure will be about 2,500 feet, including a lock mound about 1,000 feet wide, a 190-ft. lock and control station section, a 552-ft. concrete gravity-gated spillway, a 639-ft. concrete gravity fixed crest spillway with crest at elevation 32.5 in the river channel and a 174-ft. rolled earthfill abutment. In addition, a total of 505 feet of plug dams will be constructed upstream. The gated spillway will be controlled by eight 60 x 21-ft. tainter gates, with the gated sill at elevation 130. The normal upper pool level will be at elevation 33. The reservoir will cover 8,800 acres.

Private interests will construct dams to develop the headwaters of the Black Warrior River, mostly for power generation. Construction of the Lewis M. Smith Dam on the Sipsey Fork has been begun by the Alabama Power Co. The Warrior River Electric Cooperative Assn. has broken ground for one dam on Locust Fork and has a license to construct another dam on this fork. It also has a permit to study the construction of a third dam on the Mulberry Fork.

Structures of the Black Warrior—Warrior—Tombigbee Waterway

Lock	Length Feet	Width Feet	Lift Feet	Completion Date
Jackson	600	110	33	1961
Wm. Bacon Oliver	460	95	30	1940
Demopolis	600	110	40	1955
Warrior	600	110	22	1958
John Hollis Bankhead**	285	52	72	1915
Holt (No. 31)	600	110	63	Proposed

**Double Lock

Aerial view shows McDowell's excavation nearing completion. Al Johnson Construction Co. holds dam and lock contract.

80-FOOT ARM . . . 25-TON MUSCLES

"Versatility on wheels" describes this Marion 35-M Truck Crane, busy on a $1,600,000 building job in California. A one-yard clam bucket handled excavation and cleanup work. Then the 35-M placed much of the 7,000 yards of concrete involved, using a 60-foot boom and 20-foot jib for plenty of reach. Smooth, easy-to-operate Marionair Control, anti-friction bearings at important points including the swing rollers and easy maneuverability of the carrier helped it turn in another impressive profit-minded performance. See your Marion Distributor about the newest developments in fast, low-cost truck, wagon and crawler cranes.

You get **MORE** *with* **MARION**

TODAY'S MARIONS GIVE YOU MORE IN SUSTAINED, LOW-COST PERFORMANCE

MACHINE	Shovel Capacity	AVAILABLE AS . .			
		Hoe	Crawler Crane	Truck Crane	Special Crane
35-M	¾	Yes	Yes	Yes	—
43-M	1	Yes	Yes	Yes	—
362	1½	Yes	Yes	—	Yes
93-M	2½	Yes	Yes	—	Yes
101-M	3	—	Yes	—	—
111-M	4	—	Yes	—	—

MARION POWER SHOVEL CO. • MARION, OHIO

A Division of Universal Marion Corporation

Send me information about MARION ..... yard shovels, ... yard hoes and ..... ton cranes (☐ crawler mounted ☐ truck mounted).

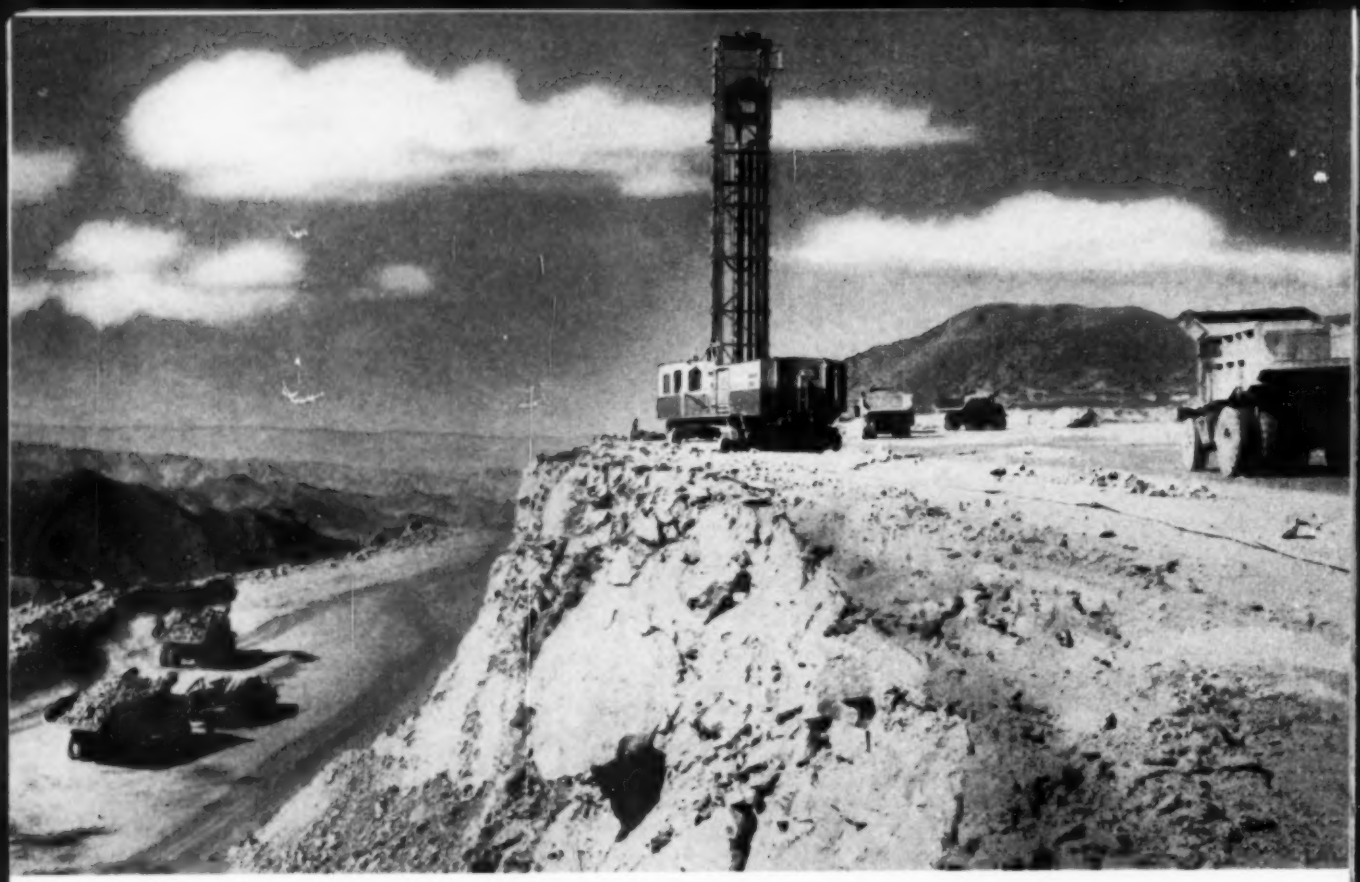
☐ Have a salesman call.

Name ..... Title .....

Company .....

Street .....

City ..... Zone ..... State .....



50-Rs Speed Mountain Top Removal At Huge Latin American Copper Mine

Fast-drilling Bucyrus-Erie rotary drills were put to use recently as Southern Peru Copper Corporation began blasting operations at its new mine located 100 miles inland from the Pacific port town of Ilo.

Before any ore can be mined, the company must remove the top from a mountain called Toquepala. Excavation amounts to some 120 million tons of rock and earth.

To get things going, seven 50-Rs were brought in for drilling blast holes. They are well equipped for the job. *Variable drilling speed* and *variable pulldown pressure* provide the resources for speed drilling at Toquepala.

Ward Leonard variable voltage control gives the operator smooth, instant command over rotation of the drill pipe. He can choose the most efficient speed for a given formation without stopping the drilling operation. Hydraulically powered down pressure on the bit provides controlled load on drilling tools for maximum penetration.

These seven 50-Rs are electric rigs designed for drilling 9⅞ to 12¼-in. holes. For drilling 6¾ to 9-in. holes Bucyrus-Erie Company offers the 40-R with either diesel-electric or full electric power.

Get the full story on these drills today. Write direct for illustrated literature. Bucyrus-Erie Company, Drill Division, U.S. Highway 40 West, Box 324, Richmond, Indiana.

74B58C

A Familiar Sign . . . BUCYRUS ERIE *. . . at Scenes of Progress*

New Trade Literature

Subject: **Diesel Engines**

Content: A 12-page Detroit Diesel brochure entitled *There Is a Difference in Diesels* covers topics such as diesel versus gasoline engines, the difference in 2-cycle and 4-cycle engines, fuel systems, parts interchangeability, service and others. It includes information on fuel to assist diesel engine owners and operators in selecting the type of fuel that will result in the most satisfactory operation of their engine.

Where to get: Detroit Diesel distributors or dealers or Detroit Diesel Engine Div., Department EE, General Motors Corp., Detroit 28, Mich.

Subject: **Demolition Tool Bulletin**

Content: Ingersoll-Rand has published a comprehensive catalogue of its line of digging tools and accessories. The 24-page bulletin includes a useful page on reforging, sharpening and the proper method of hardening these tools. This full-page guide can be removed from the pamphlet and tacked-up as a wall chart for quick reference in the reconditioning shop. A special section of the bulletin tells about safety tools of forged beryllium copper to be used where sparks can't be tolerated. In all, the bulletin describes 16 variations of the manufacturer's digging and demolition tools and 64 accessories. Ask for form 4190.

Where to get: Ingersoll-Rand Co., Department EE, 11 Broadway, New York 4, N. Y.

Subject: **Cat Tractors**

Content: A comprehensive discussion of the capabilities of large crawler tractors is given in *Increase Power, Production, Profit*, a 12-page Caterpillar booklet. It points up the uses of the D8 and D9 tractors in construction, logging, mining, pipelining and railroad applications. Brief specifications are given for both machines. Photographs and drawings emphasize the features of torque converters, the oil clutch and the constant "live shaft" power for hydraulic and cable controls, steering clutches and brake boosters. Ask for form D841. A second booklet, titled *Not An Element of Doubt*, gives helpful service tips on filter replacement. Filtering improvements developed by Caterpillar are explained in detail. The booklet contains cost study information coupled with recommendations for extending oil change periods. Cut-away photographs show the inner parts of filter elements and point out their design characteristics. The importance of proper fit, temperature stability and rate of oil flow are also discussed. Copies are available in English, French, Spanish and Portuguese. Ask for form DE839, specifying title and language version.

Where to get: Caterpillar dealers or Caterpillar Tractor Co., Advertising Div., Department EE, Peoria, Ill.

Subject: **1½-Yd. Shovel**

Content: A 12-page catalog describes the new Manitowoc 1½-yd. model 2300 shovel which is convertible to 1½-yd. clamshell or trench hoe, 1½ to 2½-yd. dragline or 35-ton crane. In addition to giving full specifications, the bulletin outlines in detail features such as hydraulic jack adjustment of the crawler drive; controlled clutch ventilation; and the new flat-designed 62-in. roller path which minimizes strain on the king pin.

Where to get: Manitowoc Engineering Corp., Department EE, Manitowoc, Wis.

Subject: **Brake Equipment**

Content: A four-page bulletin describes the use of B. F. Goodrich Hi-Torque brakes for heavy-duty and off-highway construction vehicles. It explains how the Hi-Torque brakes increase the service life of heavy equipment, how the brake permits quick stopping and how it gives equipment operators greater safety and control. The Hi-Torque is the first hydraulic drum type brake with 360° expander tube actuation designed exclusively for large tractors, scrapers and earthmovers.

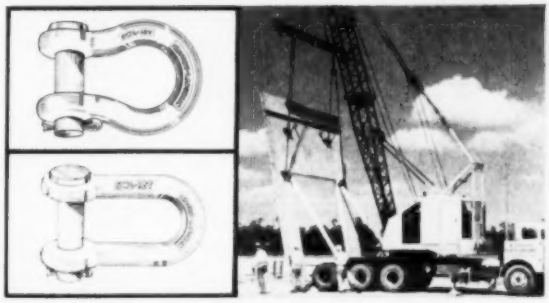
Where to get: Aviation Products Div., Department EE, B. F. Goodrich Co., Akron, Ohio.

Subject: **Safety Programs**

Content: The National Safety Council has available two new publications—one for employees, the other for foremen. The publication written for employees, *Rules for Safety*, is the "biggest and best safety rules booklet ever compiled—40 pages covering accident prevention do's and don'ts, how's and why's," the Council says. The booklet gives safety rules for using power tools, stacking material and lifting and carrying. The publication for foremen is a compilation of articles that appeared in a recent NSC series of safety talks.

Where to get: National Safety Council, Department EE, 425 N. Michigan Ave., Chicago 11, Ill.

Load-Rated* DOES THE JOB!



Handling Tilt-Up Panels With Crosby-Laughlin Load-Rated Shackles

Crosby-Laughlin* LOAD RATED Shackles are demanded on jobs where safety is essential! "Takes the guesswork out of buying fittings" say users of the LOAD-RATED Line. Quality steel is drop forged—heat treated for toughness. *Order capacity* for the job—*see* guaranteed capacity stamped on LOAD-RATED Fittings! Safety is no accident when you order from the *world's most complete line* of drop forged fittings for wire rope and chain. Sold by construction, industrial and mill supply distributors. Ask for free catalog.
*Trademark

CROSBY-LAUGHLIN *Division*
AMERICAN HOIST & DERRICK COMPANY
FT. WAYNE, INDIANA

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—10th of preceding month. Example: January closes December 10th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Marion shovel 3-cyl. Model 40A; Serial No. 6943, 80-ft. boom, Fairlead, 20-ft. tracks 42-in. pads, new 36R Cat. engine. Crane used 680 hrs. Nearly new. F.O.B. Torrance, Calif. $27,500.

VALLEY EQUIPMENT CO.
EM 3-7432 — **Salem, Ore.**

FOR SALE

650-B Bucyrus-Erie Elec. Drag, 195', 16-yd.
15-W Bucyrus-Erie Elec. Drag, 215', 13-yd.
634 Page Elec. Drag, 185', 13-yd.
9-W Bucyrus-Erie Diesel Drag, 175', 13-yd.
625 Page Diesel Drag, 150', 10-yd.
723 Page Diesel Drag, 130', 10-yd.
621-S Page Diesel Drag, 125', 7-yd.
200-W Bucyrus-Erie Diesel Drag, 125', 6-yd.
7-W Bucyrus-Erie Diesel Drag, 180', 5-yd.
5-W Bucyrus-Erie Diesel Drag, 100', 6-yd.
2400 Lima Dragline, 130', 5-yd.
4500 Manitowoc Drag, 120', 5-yd.
88-B Bucyrus-Erie Drag, 90', 4½-yd.
111-M Marion Drag, 80', 4-yd.
3900 Manitowoc Speedcrane, 100' boom.
3500 & 3000 Manitowoc Crawler Cranes.
5560 Marion 26-yd. Elec. Shovel.
750-B Bucyrus-Erie 20-yd. Elec. Shovel.
5480 Marion 18-yd. Elec. H.L. Shovel.
170-B Bucyrus-Erie 6½ yd. Elec. Shovel.
120-B Bucyrus-Erie 4-yd. Elec. Shovel.
Large selection of smaller shovels and Draglines available.
Model T-750 Reich Truck Mounted Rotary and Down-the-Hole Drill.
Lima Model "C" Roadpacker.
Euclid Trucks, Truck Cranes, Dozers, Scrapers, Front End Loaders, Drills, Buckets, Attachments and other misc. equipment available.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. — **GLadstone 5-3658**

Bucyrus-Erie 120-B dragline, 100' boom with gantry mast, 4' tracks, A-1 condition, located northern California. For sale or lease.

THURMAN & WRIGHT
625 Market Street — **San Francisco, Calif.**

4—200-W Bucyrus-Erie draglines.
1—620 Page dragline.
1—1201 Lima dragline.
1—80 D Northwest shovel.
1—120-B dragline boom.
1—Koehring 1½-yd. elec. tunnel shovel.
1—44-B Bucyrus-Erie shovel.
6—9 LTD Euclids, bottom dump.
4—36 TD Euclids, end dump.
1—34 E Foote paver.
4—34 E Rex pavers.
1—#6 Northwest shovel front.
Complete Catalogue on Request.

WESTERN EQUIPMENT CO.
Used Machinery Division
4009 Fairview Avenue
Box 877, Boise, Idaho

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

⅜-yd. Model 10-B Bucyrus-Erie shovel (1949) good working condition. Available immediately.
½-yd. Model H-3 Bucyrus-Erie hydrocrane (1948) mounted on Chevrolet truck chassis, equipped with tagline reel, 12-ft. boom insert, operator's cab, hydraulic clamshell bucket. Very good condition.
¾-yd. Model H-3 Bucyrus-Erie hydrocrane (1951) mounted on I.H.C. truck chassis, equipped with operator's cab, tagline reel, clamshell bucket. Very good condition.
¼-yd. Model 375 American crawler shovel with Waukesha gas power (new 1949). Can go right to work; make us an offer. $4,500
¾-yd. Model 255A P & H crawler dragline, equipped with fairlead, 35-ft. boom, Cummins diesel engine. Priced to sell.
1-yd. Model LS-90 Link-Belt shovel new 1953, Waukesha gas power. Excellent condition. For sale or for rent.
1-yd. Model 30-B Bucyrus-Erie Maxi-Mounted wagon crane, 35-ton capacity, 6x4 carrier, 14.00 x 20 tires, duals on all wheels, GMC Series 4-71 diesel engine, 50-ft. pin-connected boom, pendant suspension, tagline reel, independent propel, 4 mph travel speed. Machine used 3 months. Priced to sell. $49,500. Today's replacement cost $71,000.
1-yd. Model 455 P & H crawler crane-clam-dragline with 75-ft. boom, 15-ft. jib, Chrysler 8-cyl. gas engine. Entire machine in excellent condition. F.O.B. Milwaukee, Wis.
1¼-yd. Model 33-B Bucyrus-Erie crane-clamdragline machine, 70-ft. boom, independent boom hoist, gas power, in very good condition. A lot of machinery for $16,500.
1½-yd. Model 604 Lima crane-dragline machine (1951), with Cummins diesel engine, 80-ft. boom and fairlead. Was overhauled last winter, very good condition. Price $27,500. Now rented, but is available for sale.
2-yd. Model 820 Lorain crane-clam-dragline combination—Cat. D13000 diesel engine, swamp cats, 110-ft. flange type boom, fairlead, pressure lubrication system; in excellent condition. Now rented—available 60 days.
3-yd. Model 1201 Lima crane-dragline machine (1950) with Buda diesel engine, long wide crawlers, 110-ft. boom—in good condition. Priced to sell under $38,000.

SUBJECT TO PRIOR SALE

J. P. WAITE, INC.
3304 W. Pierce St. — **P.O. Box 313**
Milwaukee 1, Wis. — **EVergreen 4-1900**

Bucyrus-Erie 15-B, equipped with backhoe, dragline and shovel—Chrysler gas engine. There is a lot of work left in this machine. Located at Denver, Colo.
International UD-18A power unit—this engine has been given a complete overhaul—a very good power unit. Ready to go to work. Located at Denver Colo.
Caterpillar diesel generator set, engine model D315, generator model D318, 110/220 volts, 3-phase, 60-cycle—this set carries a near new classification. Located at Denver, Colo.
Model 'L' Quickway—machine is equipped as a backhoe, mounted on Federal truck—this machine is fair to good and can be bought accordingly. Located at Denver, Colo.

Used Excavator Attachments
Lorain L-80J, 1¾-yd. shovel attachment, very good .....$3,250.
Bucyrus-Erie shovel attachment, near new $4,500.
Bucyrus-Erie 22-B shovel attachment, dipper trip .....$1,750.

THE COLORADO BUILDERS' SUPPLY CO.
1534 Blake St. — **Denver 2, Colo.**

SMALL SHOVELS, CRANES, DRAGLINES—UP TO 2½ YDS.

Marion Model 93-M, 2½ yd. shovel, Serial No. 21514 Delivered new June, 1956. Powered by Caterpillar 337-F Diesel engine with Twin Disc, 3-stage, Torque Converter. 36 in. pads. Price, F.o.b. Birmingham, Ala.—$57,750. Box 3735.

Bucyrus-Erie 10-B crane w/28-ft. boom, Buda gas engine. Serial #17346.
Price f.o.b. Greenville, N.C. .....$1750.
Quickway model "E" dragline machine with 35-ft. boom, GM-2-71 diesel engine, and mounted on Army 6x6 truck. Serial #5768.
Price f.o.b. Greensboro, N.C. .....$4000.
Lorain TL-20 combination shovel dragline backhoe machine with Cat D311 diesel engine. Serial #18422. Price f.o.b. Greensboro, N.C. $11,500.

E. F. CRAVEN CO.
Greensboro, N. C.

H-3 Hydrocrane serial No. 81139 mounted on 1950 Chevrolet truck, model 6103. Includes 12' boom insert and 10' jib. Price $4,000, f.o.b. St. Louis, Mo. Write: Euclid Sales & Service, Inc., 5231 Manchester Ave., St. Louis, Mo. Attention: Mr. F. M. Shelden.

1—Model H-3 Hydrocrane Serial #112568 (capacity 4 tons at 10-ft. radius) with 18-26 ft. telescopic crane boom and outriggers. All hydraulically operated. Mounted on 6 x 6 GMC Army truck. (This machine was delivered new in May, 1955, and has been used very intermittently, good condition.)
F.O.B. Chattanooga $7,000
1—Model H-3 Hydrocrane Serial #111123 (capacity 4 tons at 10-ft. radius) with 26-38-ft. telescopic crane boom and outriggers . . . all hydraulically operated. Mounted on Model F-600 Ford truck. (This machine was delivered new in June, 1954), good operating condition.
F.O.B. Knoxville $8,000
1—Pulpwood Grapple for use with either of above Hydrocranes . . . hydraulically operated.
F.O.B. Knoxville $700
1—Hydraulically operated backhoe attachment, 18-in. bucket, for use with either of above Hydrocranes.
F.O.B. Chattanooga $1,200

POWER EQUIPMENT CO.
1430 Island Home Ave. — **Knoxville 15, Tenn.**

For Sale: 1 Insley Model K, ½-cu. yd. capacity powered with Buda gasoline engine equipped with backhoe, shovel front, thirty foot boom and fair lead. F.O.B. Glendive, Mont. ..$4,500.

HOLM CONSTRUCTION CO.
P.O. Box 1107 — **Glendive, Mont.**

For Sale—Used Bucyrus-Erie 37-B shovel-dragline combination. Serial No. 12225 with light plant, Caterpillar engine. Includes shovel front end with 1½-cu. yd. dipper. Includes extra Cat D13000 engine with clutch and pulley, which is in good condition. Can be used as spare for 37-B. Price $6,500. F.O.B. Ironton, Minn.

Contact N. E. Hill
Pittsburgh Pacific Co. — **Ironton, Minn.**

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

SHOVELS

LIMA Mod. 34 Paymaster, ¾-yd. Crane, 30-ft. boom, Buda gasoline engine.
As inspected $8,500

LIMA Mod. 34 Paymaster, ¾-yd. Crane, 40-ft. boom, G.M. Diesel engine.
Reconditioned $14,000

BUCYRUS-ERIE 38B Shovel, 20-ft. 5-in. dipper stick, 1¾-cu. yd. dipper, powered by International Diesel engine. Rebuilt $38,500

LORAIN Mod. L820, 2-yd., combination crane, clamshell and dragline, 50-ft. boom, Rudomatic tagline and fairlead, 35-in. pads, Waukesha diesel engine.
Rebuilt and guaranteed $35,000

SHOVEL ATTACHMENT

BUCYRUS-ERIE Tunnel Shovel attachment for 22-B consisting of 14-ft. boom, 12-ft. 10-in. stick, 1-cu. yd. rock dipper, crowd drum, sprocket and crowd chain.
Excellent condition $2,200

TRUCK CRANES

LORAIN Mod. 40 Moto-Crane, ¾-yd. capacity, with 70-ft. boom, Rudomatic tagline, outriggers, gasoline engines, mounted on factory carrier with 11:00x20—14-ply tires front and 14:00x20—20-ply tires rear.
Good operating condition $11,500

LIMA 44T Truck Crane, 25-ton combination clamshell and lifting Crane, 80-ft. boom, 30-ft. jib, Rudomatic tagline, Dart carrier, 9-ft. wide, Waukesha engines. Very good condition. 30 day guarantee $30,000

SCRAPERS

Caterpillar Mod. DW21 tractor with Cat No. 21 scraper. Certified Buy $23,500

6—LETOURNEAU Mod. LS, 4-wheel scrapers. (11-yd. cap.). Excellent condition.
Each $3,250

3—LETOURNEAU Mod. LP, 4-wheel scrapers. (15-yd. cap.). Excellent condition.
Each $4,500

TRACTORS

INTERNATIONAL TD-24 diesel tractor with crankcase guard, 24-in. tracks, pull hook, elec. starter, canopy top, bulldozer blade and D.D. P.C.U. Good operating condition $10,500

ALLIS-CHALMERS HD-20H diesel tractor w/Garwood Bulldozer and D.D. P.C.U.
Operating condition $10,500

CATERPILLAR D8 diesel tractor with oil clutch, 24-in. tracks, pull hook, canopy top and Cat 8S cable blade with Cat No. 25 D.D. P.C.U. Bonded Buy $20,500

TRENCHER

CLEVELAND No. 93 Trencher, option 5, 16-in. buckets, 21½-in. cut, powered by Continental gasoline engine. Rebuilt. Good value ...$6,600

Subject to inspection & prior sale.

H. O. PENN MACHINERY CO., INC.
140th St. & East River — CYpress 2-4800
New York, N. Y.

54-B Bucyrus-Erie 2½-cu. yd. shovel with Cummins diesel engine and torque converter, 36-in. wide treads. Serial No. 118053. Machine like new. Used under 900 hours.

38-B Bucyrus-Erie 1½-cu. yd. shovel No. 85914 with Caterpillar diesel engine, 33-in. wide treads. Located in Seattle.

20-B Bucyrus-Erie shovel with Hercules RXC gas engine. 1940-overhauled. Serial No. 116822.

Model 25 Northwest diesel shovel and pull shovel, GMC diesel engine. Serial No. 7723. Located in Seattle

Model 25 Northwest dragshovel with Caterpillar D318 diesel engine. New tracks. In excellent condition. Serial No. 11986. Located in Seattle.

Model L-41 Lorain hoe with Waukesha gas engine. Serial No. 17832.

CLYDE EQUIPMENT COMPANY
3410 First Ave., So. — Seattle 4, Wash.

Bucyrus-Erie 38-B crane boom, 85', complete with mast, pendants, drum lagging and hook block—perfect condition. For details consult—

POLK EQUIPMENT CO.
490 N. Broadway — Bartow, Florida

BARGAIN: Bucyrus-Erie 38-B crawler diesel crane, good condition, only $19,000 f.o.b. Detroit.

THE ACME EQUIPMENT CO.
14057 Schaefer — VErmont 7-03666
Detroit, Mich.

SMALL SHOVELS, CRANES, DRAGLINES — UP to 2½ YDS.

Lorain Model 150, 1-cu. yd. capacity, 70-ft. boom, pendant suspension, fairleads, tagline, long and wide tracks. $14,000.

Schield Bantam Model M49 backhoe and crane with 35-ft. boom, mounted on White halftrack, $5,500.

Link Belt model LS50, ½-yd. capacity, shovel and backhoe crawler mounted, Buda gasoline engine, $6,000.

"Quick-Way" model L, ½-yd. capacity, 40-ft. boom, mounted on White halftrack, $5,500.

Unit ½-yd., shovel, crawler mounted. Powered by Chrysler gasoline engine. $3,500.

Koehring model 304, ¾-yd., backhoe, crawler mounted, with IHC model UD 14 diesel engine. $10,500.

"Quick-Way" model S, ½-cu. yd. backhoe, mounted on White halftrack. $3,000.

The above prices F.O.B. Elizabethtown, Ky.

Lorain model 820, 2-yd. shovel, Serial No. 15552. Caterpillar D13000 engine. Good operating condition. Equipped with drum for dragline operation. $25,000. F.O.B. Louisville, Ky.

Lima model 1201, 3½-yd. shovel, delivered new 1950. Powered by Cummins model L diesel engine. Overhauled Nov. 1957. Good operating condition. $42,000. F.O.B. Ohio Location.

BRANDEIS MACHINERY & SUPPLY CO.
Brook & Warnock Sts. — P.O. Box 1705
MElrose 7-4741 — Louisville 1, Ky.

1—Bucyrus-Erie 15-B dragline—Cat diesel power.

1—Koehring 303—¾-yd. dragshovel, standard crawlers—Waukesha gasoline engine.

1—Worthington 16-S two bag concrete mixer on 4 pneumatic tires with 4-cylinder Wisconsin gas engine. Excellent buy.

1—Wiley PM-215 Patchmobile portable asphalt patching unit on 2 pneumatic tires, complete with rotary dryer.

1—Ruhr M-1½-cu. yd. heavy duty grapple. New—excellent buy.

1—Wayne 36-in. rider industrial vacuum pick-up power sweeper.

1—LeRoi 315 air compressor on four pneumatic tires.

S. M. CHRISTHILF & SON, INC.
Timonium Road & Harrisburg Expressway
Timonium, Md.

MISCELLANEOUS EQUIPMENT

1—Joy 58 BH rotary blast hole drill, shipped in 1951, 440-volt, 3-phase, 60-cycle. Derrick equipped for handling 20-ft. rods. Equipped with L80E model 125, 550 cfm. compressor and three leveling jacks. Machine located at Harrisburg, Ill.—Can be seen anytime.

SAHARA COAL CO.
Harrisburg, Ill.

48-L—Two new unused Waukesha 6WAKU 6 cyl. 6¼ x 6½ in. natural gas-gasoline engines.

40-R-48-L—One new unused Cat. D337 6 cyl. 4¾ x 6½ in. diesel engine.

50-T—One new unused IHC UD-18A 6 cyl., 4¾x 6½ in. diesel engine.

1-W—One rebuilt IHC U-1 4 cyl. 2⅝x2¾ in. gasoline engine. Never operated after rebuilt.

Above engines offered as is F.O.B. South Milwaukee, Wisconsin subject to prior disposition. Will sacrifice for quick sale.

J. E. Smart
Bucyrus-Erie Co. — South Milwaukee, Wis.
Phone: SO 2-0900

29-T churn drill parts available in Los Angeles. Contact: Kaiser Steel Corp., Equipment Dept., 612 S. Flower St., Los Angeles 17, Calif.

Model 27-T blast hole drill, serial No. 18269, Waukesha gasoline power, crawler-mounted, 33' one-piece all-steel derrick complete with tools in good working order. Located in Missouri. Priced to sell. — Box 3718

3—New, unused, 3 cu. yd. type "BU", Bucyrus-Erie lightweight dragline buckets with all fittings. Weight—5150 pounds each. Special reduced price—$2000 each. F.O.B. Evansville, Ind.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

MISCELLANEOUS EQUIPMENT

4—CATERPILLAR D8 DIESEL TRACTORS, 2U Series equipped with Trackson MD8 pipelayers, counterweights, crankcase guards and electric starting systems. All in fair to good working condition. Located at Dodge City, Kan.
Each $9,500

CATERPILLAR D8 DIESEL TRACTOR, Serial 2U10506, equipped with Cat No. 24 front-mounted cable control, Cat No. 8-A Angledozer, Hyster D8N worm drive winch, and crankcase guard. Good condition. $8,500

3—INTERNATIONAL TD-14 DIESEL TRACTORS, TDF-15000 Series, equipped with rear-mounted towing winches. Fair working condition. Located at Dodge City, Kan.
Each $2,250

HYSTER D7N TOWING WINCH complete with controls and P.T.O. shaft for use with Cat D7 tractors, 7M thru 17A Series.
Excellent condition $1,200

HYSTER D8N TOWING WINCH complete with controls and P.T.O shaft for use with Cat D8 tractors, 1H thru 13A Series.
Excellent condition $1,500

HYSTER D8N WORM DRIVE WINCH complete with controls and P.T.O. shaft for use with Cat D8 tractors, 1H thru 13A Series.
Good condition $2,250

INGERSOLL-RAND MODEL D-85 PORTABLE AIR COMPRESSOR, Serial 40T45930 powered by Waukesha 4-cyl. water cooled gasoline engine and mounted on two pneumatic tired wheels with towing tongue. This Compressor will deliver 85 cu. ft. of air per min. at 100 lbs. pressure.
Good working condition $1,500

CATERPILLAR MODEL 9S STRAIGHT BLADE BULLDOZER, Serial 53C866 consisting of blade, push arms and braces.
Excellent condition $2,700

CATERPILLAR MODEL No. 212 TANDEM DRIVE DIESEL MOTOR GRADER, Serial 9T4589, equipped with cab, heater, lights, electric starting system, scarifier, 12-ft. blade, and 10:00 x 24 tires, front and rear. New condition, used 548 hours $10,500

ATECO MODEL HRD9 HYDRAULIC RIPPER, Serial 8163 complete with two shanks, pump, controls, etc., for mounting on Cat D9 tractor. Used 850 hours and in excellent condition $5,500

BARBER-GREENE MODEL 879-A LAY-DOWN MACHINE, Serial 20053 equipped with extensions for 12 to 14-ft. mat, powered by LeRoi D-201 gasoline engine.
Good condition $10,500

CEDARAPIDS MODEL FA HOT MIX PORTABLE ASPHALT PLANT. Serial 15004 complete with two compartment feeder, drier with cold elevator, low pressure burner, dust collector, two Cat D318 diesel power units and one Cat D315 diesel power unit, with pneumatic tired wheels and air brakes on all running gear. Good condition ..$55,000

R. L. HARRISON CO., INC.
P.O. Box 1320
Albuquerque, New Mexico

9-W ENGINE

New, unused Cooper-Bessemer JS-6-D 13" x 16" diesel. Current model. Will sacrifice. Contact—

J. E. SMART
Bucyrus-Erie Co. — South Milwaukee, Wis.
Phone: SO 2-0900

4—17 yd. Euclids @ $11,500 each.
7—13 yd. Euclids @ $ 7,500 each.
2—13 yd. Euclids @ $ 6,500 each.
1—¾ yd. shovel front for model 41 Lorain.

All this equipment in excellent operating condition and can be seen at 718 Murfreesboro Road, Nashville, Tennessee.

McDOWELL & McDOWELL CONTRACTORS
P. O. Box 1144 — Nashville, Tenn.
Phone: AL 5-0304

ONE—2¼-YD. COAL LOADING DIPPER, NEW FOR 38-B. LOCATED NEAR PITTSBURGH. $2500.
BOX 3720

¾ cu. yd. slightly used, type AX, medium duty dragline bucket complete with fittings. Weight 1,900 pounds. Special reduced price $916. F.o.b. Bellwood, Ill.

BUCYRUS-ERIE COMPANY
Evansville, Indiana

MISCELLANEOUS EQUIPMENT

2—3 cubic yd. type "BM" medium duty, thoroughly reconditioned dragline buckets complete with all fittings. Weight 4800 pounds each. Special reduced price $2,508 each. F.o.b. Evansville, Ind.

BUCYRUS-ERIE COMPANY
Evansville, Indiana

1—Used 3/4 cu. yd. double ram clamshell bucket for H-3 Hydrocrane. Special reduced price $700. F.o.b. Evansville, Ind.

BUCYRUS-ERIE COMPANY
Evansville, Indiana

FOR SALE

1—29-T Bucyrus-Erie wire line blast hole drills.
2—42-T Bucyrus-Erie wire line blast hole drills.
1—New RCA metal detector—10 in. x 36 in. aperture.
1—Fuller-Kinyon system.
1—Second hand drop ball (3200#).
9—New well drill bits—3¾ in. x 4¼ in. 7 API joints.
2—Pennsylvania, Class DE-2, two-stage, duplex, cross compound, (direct connected). Synchronous motor driven air compressors.

Low pressure air cylinder diameter.....20 in.
High pressure air cylinder diameter.....12 in.
Stroke.....14 in.

1—Ingersoll-Rand Model GK315 air compressor, Serial No. 502 227.
2—Bucyrus-Erie No. 12 bit dressers. Electrically driven.
2—Bucyrus-Erie B-103 oil burning bit furnaces with blowers.
1—Traylor Model TZ gyratory crusher.

NEW YORK TRAP ROCK CORP.
Old Mill Road
West Nyack, N. Y.
Telephone—NYack 7-4500

HELP WANTED

Experienced driller, bilingual Spanish/English, willing to travel extensively in Mexico, Central and South America working as serviceman, instructor and demonstrator on water well, shallow oil well and blast hole drilling equipment, both cable tool and rotary. Reply giving resume of education, experience, age, marital status, salary expected, etc., to Box 3738.

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Thank You

Notes from the Manufacturers

Bucyrus-Erie Co., Drill Div., Richmond, Ind., has made four sales appointments. The appointees and their positions are: William G. Barnes, sales engineer, blast hole drills; Robert E. Cannon, service manager; Mark J. Janich, supervisor, parts and tools sales; and William G. Piper, supervisor, sales technical section. Barnes had been sales representative on the Mesabi iron range since joining the company in 1956. He formerly was a mining superintendent and engineer with the Aluminum Company of America. He also formerly was employed by Climax Molybdenum and M.A. Hanna Co. Before joining Bucyrus-Erie in October 1957, Cannon had been a mining consultant in South America for various companies. He also was a drilling contractor in South America and held various positions on the Mesabi range and the Arizona and Nevada copper mines. Janich joined Bucyrus-Erie in 1936. He worked for a number of years in the parts division at the South Milwaukee (Wis.) plant. He has held various staff positions in the drill parts section. Piper worked in various sales capacities with Atlas Powder Co. Prior to joining Bucyrus-Erie, he had been a mining sales development engineer for General Electric Co.

J. I. Case Co., Racine, Wis., has acquired controlling interest in an overseas plant. J. I. Case International, S.A., a wholly owned subsidiary, now holds a majority stock interest in one of France's oldest tractor manufacturers, Societe Francaise Vierzon. This firm is located at Vierzon, France, some 100 miles outside of Paris. Societe Francaise Vierzon has been in continuous operation for over 100 years and ranks among the major farm equipment manufacturers in France. Present operations employ about 1,500 people. Case management and technical personnel will be incorporated into the operation. Case is planning to progressively expand the French operation by the addition of newly developed Case farm implement and industrial equipment. This will result in making Vierzon the largest volume overseas operation in which Case has a majority interest.

Curtiss-Wright Corp., Wood-Ridge, N. J., has entered the construction equipment field and will market the former Wooldridge line of earthmovers. The line will be handled by the firm's South Bend (Ind.) division. It includes self-propelled and tractor-drawn scrapers ranging in size from 7 to 30 cubic yards and rear-dump models in sizes up to 35-ton capacity. A market program, which calls for expansion of the established distributor and service organization for the equipment, is under way.

Highway Equipment Co., Cedar Rapids, Iowa, has named C. (Doc) Meader as a district representative. Meader will cover the states of Arizona, California, Idaho, Montana, Nevada, Oregon, Utah and Washington. Highway Equipment manufactures lime and fertilizer spreaders, asphalt spreaders and ice control equipment.

LeTourneau-Westinghouse Co., Peoria, Ill., has a new distributor in Ohio. Ackerman Chacco Co., Inc., 9500 Kenwood Rd., Cincinnati, has been appointed distributor for LeTourneau-Westinghouse earthmoving, hauling and grading equipment in southwestern Ohio, eastern Indiana and northern Kentucky. Well known in the Cincinnati area, the firm was founded 10 years ago by its president, M. Z. (Mike) Ackerman.

Marion Power Shovel Co., Marion, Ohio, has announced appointment of three new divisional sales managers in various sections of the country. Edward K. McGill, assigned to the eastern sales district, now is a representative in the metropolitan New York City area. Joseph R. Thurman, also assigned to the eastern sales district, now covers the states of North Carolina, Virginia and Maryland, the District of Columbia and several eastern counties of West Virginia. C. D. (Cal) Torr is a new representative in Michigan, covering the entire state except the Upper Peninsula.

For draglines, shovels, scrapers, bulldozers—you can't beat Tiger Brand Wire Rope for long, low-cost service.

Changing the face of the nation's highways

with the help of USS Tiger Brand Wire Rope

On most of the big highway jobs, Tiger Brand Wire Rope is doing the heavy work. It supplies the steel "muscles" for shovels, draglines, scrapers and other earth-moving equipment.

Contractors are large users of Tiger Brand Wire Rope because this rugged steel rope lasts longer, moves more materials, and gets the job done quicker at less cost. Its Excellay Preformed construction makes it easy to handle . . . quick to install. It has less tendency to loop, kink or whip . . . and it offers highest resistance to bending fatigue.

Tiger Brand gives long, trouble-free service because it's made from the best possible steel. From ore to finished product, every step of production is rigidly controlled to guarantee top quality. And the rope is engineered to fit the job—engineered by one of the finest staffs in the country, and backed by the basic research of the United States Steel Corporation. Next time you need wire rope, rig up with Tiger Brand. It will keep your machines on the job. American Steel & Wire Division, Rockefeller Building, Cleveland 13, Ohio.

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"A plenty tough job so we called on Caterpillar equipment for this one"

South of Camarillo, Calif., J. E. Haddock, Ltd., is relocating and improving 5 miles of U.S. 101. Some 1½ million cu. yd. of rock are being moved, 7,000 cu. yd. on an average day. Three Caterpillar DW21-Athey PR21 rigs help, carrying 18 cu. yd. apiece. The round trip is a mile, including a 12% grade.

"This job is plenty tough," says Neal E. Saul, project superintendent, "so we called on Caterpillar equipment for this one. Caterpillar gives us satisfactory service with a minimum of down time."

Now Athey PR21 Rear Dump Trailers are powered by *new* Cat DW21 (Series D) Tractors. They feature *new* Super-Turbo Engines that provide 320 HP (maximum output) and twice as much torque rise as before! Results: faster cycles, greater production —*for you.*

Other features, as articulated design and non-stop 90° turns in 33½-ft. diameter, let the DW21-PR21 maneuver in crowded, cramped quarters. Three-stage, double-acting hydraulic rams, 60° tilt and straight body interior permit fast, clean dumping. The PR21 is 14 ft. 1 in. long, 9 ft. wide, allowing fast, easy shovel loading. Below are other Athey trailers suited to construction work.

The complete trailer line of Athey is available through your Caterpillar Dealer. Let him demonstrate on *your* job the hauling unit that's best suited to your requirements.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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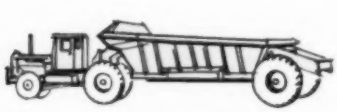
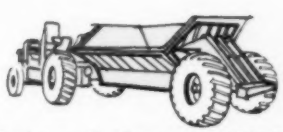
THE ONLY COMPLETE TRACTOR-TRAILER LINE... BY THE LEADERS



DW20-PW20, 40-ton capacity, speeds to 35.8 MPH. Exclusive 3-door, bottom dump design and high arch axle minimize dumping resistance.

"PR" Series — rear dump. Available for the DW21 (above), DW20 (34-ton cap., 23-second dump), DW15 (22-ton cap., speeds to 37.2 MPH, 13-second dump).



"PD" Series — side dump. Available for the DW20 (30-ton cap.) and DW15 (20-ton cap.). Both have 70° dumping angle and can dump on the run.